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ABSTRACT

This book consists of 18 selected papers that focus on the broad topic of the educational process. All the papers were originally presented at the Fourteenth Annual Conference of the Australian College of Education, which was held in May 1973. Titles of the papers include "The Educational Process: The Raw Material," "Towards a Sociology of Learning," "Learning and Teaching in the High School and the University," "What Education Means to Me: An Aborigine's Perspective," "The Educational Process from a Layman's Point of View," "A New Approach to Education: The Open Classroom Concept," "Science in the Primary School in Australia," "Adolescent Values and the Secondary School," "Roles of Teachers in Inquiry Classes," "Teaching Modern Languages in Secondary School," " The Outcomes of Secondary Education," "'Foreign Accent' or Mastery of Speech Rhythm?" "Priorities for the Improvement of Teaching and Learning at the Tertiary Level," "Architectural Design and the Tertiary Educational Process," "Classroom Television in the Educational Process," "Reading with Words in Colour," "Graphical Communication," and "Worries of the New Student." (JG)

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PREFACE

This volume consists of a number of selected papers presented to the Fourteenth Annual Conference of The Australian College of Education.

The Conference was held at the University of Sydney from 12 May to 17 May 1973.

The Theme of the Conference was "The Educational Process" a theme which allowed for a wide variety of subjects to be covered. The pattern of the conference was to have invited speakers deliver "main" papers from the viewpoints of a sociologist, a psychologist, a philosopher and a layman. These papers were supplemented by members' papers on many different aspects of the theme. The opening address was delivered by the retiring President, Mr. W. N. Oats.

As 35 papers were given it is regretted that it has not been possible to reproduce all of them. A complete list of papers has been published in the Annual Proceedings of the Fourteenth Annual Conference.

September, 1973.

INTRODUCTION

"The Educational Process" was chosen as the theme of the fourteenth annual conference of the Australian College of Education in order to focus attention on what students of all ages experience and do in schools, universities and colleges. In theory student-active learning has been the aim of educational practice for many years. However, except in pre-school education and for a few outstanding exceptions in primary and secondary schools, education has remained not only teacher-directed but also teacher-centred. During the conference the addresses and the discussions made it clear that teachers in all kinds of institutions are today concerned that the educational experience should be a process of learning rather than that of being taught.

Mr. Oats in his Presidential address "The Raw Material" re-emphasises the concept of the teacher as the gardener who provides "a humane setting for nourishment and growth". Professor P. W. Musgrave, speaking as sociologist in education describes the learning experience as a process of negotiation between teachers and students and asks us to find out much more about education as understood and defined by those who do the learning. In "Science Education in Primary Schools — A Critical Survey" Mr. S. W. G. Ellyard describes how pupils may be involved in learning by the discovery method. In discussing the conservation of the environment he writes "these are problems of scientific investigation . . . children are interested in them and young people have shown considerable ingenuity in investigating them". In their paper "A New Approach to Education. The Open Classroom Concept" Dr. R. K. Browne and Mr. C. J. H. Crain state, "We believe that the essential objectives of education must be premised on the recognition that education is a process of changing behaviour and that a changing society requires the capacity for self-teaching and self-adaptation". Dr. W. Lang, an expert teacher who has contributed much to the Australian Science Education Project described how student learning can be fostered in her description of the "Roles of Teachers in an 'Inquiry' Classroom".

Professor W. M. O'Neil was asked to speak on the theme of the conference as a psychologist. He chose to discuss "Learning and Teaching in the High School and University" and his assessment is that in both forms of institution the present methods are failing to produce student-active learning.

Mr. B. Brennan asks teachers to see the secondary student as much more than a learner in the cognitive domain. In "Adolescent Values and the Secondary School" he says that to know what these values are and what are their sources "would have implications not only for the teaching of all subjects but also for the guidance programme of the school, for student government for work in the vocational areas, for the sporting and social programmes of the school and particularly for the public relations and family contact policies of the school".

Dr. R. G. Rowlands, however, discovered that teachers in the secondary schools assess their students according to those qualities which are part of the

liberal-education tradition which leads to academic success and are not so concerned with the other values considered important by adolescents. His conclusions in "The Outcome of Secondary Education" are based on a state-wide survey of teachers presenting students for the Higher School Certificate Examination in Victoria. At the tertiary level of education Mr. A. H. Miller has discovered that graduates report inadequacies and inefficiencies in traditional teaching methods using lectures, laboratory classes, tutorials and essays. His findings are recorded in the paper "Priorities for the Improvement of Teaching and Learning at the Tertiary Level". Dr. J. M. Collins consulted students in the first year of tertiary education and reports his findings and comparisons in "Worries of the New Student". The address, "Architectural Design and the Tertiary Educational Process" has been included in this volume because Mr. A. J. Lonsdale has discussed an experiment at the W.A. Institute of Technology in which a large open teaching space is substituted for the usual arrangement of lecture theatres and tutorial rooms in order to facilitate flexibility in teaching and learning and to provide the most appropriate methods according to the tasks to be achieved.

The renewed emphasis on student learning was strongly emphasised during the conference but it is well to note the warning given by Professor Musgrave at the end of his address. He says "A . . . dialectical view of learning in the universities has led to the incipient demise of the god-professor. Perhaps we shall soon see a similar fate for the god-teacher, although, since education in essence is about changing students towards some given and justifiable goal, the coming death of these two god-figures need not see their replacement by another, the god-student".

A number of papers given at the conference were concerned with communication. Because communication is so important in the educational process, five addresses which provide some special or different approach have been included in this publication. Mr. Z. Volek offers valuable insights into a "Teaching Modern Languages in Secondary Schools". In her study, "Foreign Accent — a Mastery of Speech Rhythm" Miss C. Adams reports the results of research at the University of Sydney. The Reverend Brother W. X. Simmons provides helpful advice about a different medium of communication in "Classroom Television in the Educational Process". Unfortunately it is not possible in a book to reproduce the illustrated lecture about "Graphical Communication" with which Professor C. E. Moorhouse entertained and instructed his audience. His original written paper, however, has been printed with as much illustration as it was possible to include. The editors considered it was important to include Miss D. L. Gum's paper "Reading with Words in Colour" because of the importance of her report of the study of the method with cerebral palsied children and her suggestion that it might be successful in other fields, such as in the education of indigenous New Guinea children.

It was not, of course, possible to include in one book all the papers given at the conference. Those which were most relevant to the theme and which provided new approaches or information were selected. There are, however, two addresses not previously mentioned which require comment. It was decided to ask someone who was not a professional in the field of education to discuss "The Educational Process from a layman's point of view". Mr. R. B. Prowse accepted the invitation and in his address, entertained, instructed and

rightly and appropriately aroused criticism from his audience of educators. The report provided is a summary of his address to the conference.

The paper which stirred the members of conference more than any other was given by Mr. T. Widders. His address, "What Education Means to Me — An Aborigine's Perspective" was followed by many questions and later by much discussion. It is hoped that its publication will lead to further questions and discussion and especially acceptance of the plea he made at the conference, that white Australians find ways of communicating and entering into dialogue with his people.

THE EDUCATIONAL PROCESS: THE RAW MATERIAL

W. N. OATS, O.B.E., B.A., B.ED., F.A.C.E.

The subject for this Conference is The Educational Process. I have sub-titled my address—The Raw Material.

I considered using an alternative sub-title borrowed from a letter which Harold Loukes, Reader in Education at Oxford University wrote to me describing an Anglo-American Conference on Moral Education. 'Our American friends', he said, 'talked incessantly about socio-cultural transmission structures entailing psycho-dynamic inter-action between pre-pubertal age-grade surrogates, while the English talked about kids in classrooms.'

So my sub-title could well have been '*kids in classrooms*', for these are the raw material of the educational process, or at least for that part of the process which goes on from 5 to 18.

The Educational Process

I must admit to some misgivings about the term 'process'. This term suggests that the School processes the raw material in much the same way as an apple-grader sieves a moving tray of raw material, the apples. All of these have grown, each to his own stature and by its sieving action the machine shakes the moving apples over a series of different-sized apertures, through which they drop out, each to his allotted place in society, branded, packaged, certificated. I believe the danger implicit in the term 'process' is that we may be tempted to exaggerate the importance of the process and overlook the nature of the raw material.

The use of the adjective 'educational' implies that we are concerned about the educational ends and means of that process and with the raw material, the child himself. The educational process is a continuing process, beginning with that most active period which precedes formal schooling, going on within the school during the limits of statutory schooling (in spite of Bernard Shaw's claim that his education was interrupted by his schooling) and continuing then throughout adult life. But for the purpose of this address, I shall be thinking of the processing of the raw material during the period of formal schooling.

Education is concerned with the individual *in* society

Educational philosophers swing between the two poles of emphasis—between the developmental needs of the individual at the one pole and the claims of society at the other. If I first set my compass to the former to guide my wandering thoughts, it is not because I deny or even underestimate the pull of the latter. The individual has to live in society, but my contention is that we often neglect to examine the nature of the individual self which is to be processed, educationally or otherwise.

There are those who postulate a sociological explanation for the emergence of the 'self'—G. H. Mead is one exponent of this view. 'The self,'

he says, 'is essentially a social structure and it arises in social experience.' (G. H. Mead, Mind, Self and Society. Chicago, University of Chicago Press, 1934, p. 140.)

It is easy, I believe, to confuse the process with the entity which is being processed, to confuse, that is, the socializing with the self that is being socialized. This is why I prefer Arthur T. Jersild's emphasis on the uniqueness and potential of the self.

> 'The self is a nucleus, a centre, both constant and changeable, a centre of awareness, a growing point which assimilates the authentic, the significant, the essential, while renouncing what is unessential, strange and harmful.'
>
> (A. T. Jersild In Search of Self, Teachers' College, Columbia, N.Y., 1952, p. 10.)

It is true the self cannot grow in isolation. It grows in the setting of the society to which it reacts and responds. But when we stress the setting rather than that which is set, the process and not what is being processed, the educational process becomes little more than a training process.

'Educational' or 'Training' Process?

It has been commonly assumed that education is derived from the Latin verb 'educere', to lead out. If it were, we'd be talking about 'eduction' (as in seduction), whereas in fact we're talking about education from the root 'educare', to nourish. We accept this idea of nourishing as the function of the teacher of young children in the kindergarten but too often that's where the gardener function of nourishing seems to stop. Thereafter begins for many the grim business of training, of leading out the child like a tame animal on a leash, or down the garden path (to return to the previous metaphor).

I take education to mean the sum of all those forces which nourish the individual self and to which the self responds. Much of what is called the educational process should however be labelled the training process. A child is trained in certain skills, such as reading, calculating, typing, 'computering'. Education is concerned more with the individual's response so that he wants to learn and so that he knows what he wants to do with his skills—and what to do with his leisure.

Training concentrates on the predetermined end-result and is concerned only incidentally with the nature of the individual being trained. Training can even be designed to go against nature. Thus a man can train a performing seal to juggle coins with his flippers—but that's not what seals by their nature were meant for. James Thurber in his fable 'The Seal who became famous' summed up with the moral:

> 'Whom God has equipped with flippers should not monkey around with zippers'.

Training is directed more to persuading and conditioning the individual to conform. Education nourishes the spirit of enquiry. We talk about training

soldiers, not about educating them, perhaps because to educate them might mean they would cease to become good soldiers.

We have until recently talked about training teachers; now significantly we call it teacher education.

To educate means being aware like Pygmalion of 'the god within the stone'. It means being anxious like the gardener to provide the best conditions for the seed to realize all its potential for growth: it means being willing to let each child be an unrepeatable experiment. Teaching calls for the faith and understanding of a Pygmalion, for the loving patience of a gardener. It also calls for a sense of humour so that we who are teachers don't take ourselves too seriously. Otherwise we may need a healthy corrective like the one Ogden Nash administered to that other branch of educators, parents, when he wrote the couplet:

> 'Children aren't happy without something to ignore,
> And that's what parents are created for'.

Sociological goals for the educational process

It is much simpler to formulate sociological goals for the educational process than to define the developmental needs of the individual self. The School can therefore be readily used as a means to process the raw material according to a predetermined social pattern. It's easy enough to see this when we take an example like that of Führer Hitler's Germany or Chairman Mao's China where the agencies of education are totally directed to producing individuals who would conform to a pre-determined social pattern.

We are not so ready to admit however that the school in a democratic society may also be regarded primarily as an agency of social purpose. Thus the U.S.A. saw the School as the means to make a united nation out of a polyglot immigrant population. More recently the U.S.A. deliberately decided to force the pace of integration of white and black by busing children from neighbourhood to neighbourhood. The School therefore has been in the front line of social conflict.

In Australia the School may not have been used for such obvious social purposes, but we talk much about the democratic role of the School in ensuring equality of opportunity. Our great faith is that by providing equal educational opportunity in the Schools all will have an equal chance to enjoy the benefits of a consumer society and none by accidents of geography or birth shall be disadvantaged or handicapped or left behind in the economic struggle.

However worthy this social aim may be, I don't see it as a primary aim of the educational process. And in any case, if we do see this as such an aim, it looks as if we may be disillusioned. A recent piece of research undertaken by Christopher Jencks and his colleagues at the Centre for Educational Policy Research, Harvard University, came up with some findings which may forecast the end to the impossible dream of equality of educational opportunity.

> 'Equalizing opportunity will not do very much to equalize results. If we want economic equality in our society, we will have to get it by changing our society, not by changing our schools. School reform is never likely to have any significant effect on the degree of inequality among adults . . . It is true that schools have "inputs" and "outputs" and that one of their nominal purposes is to take human raw material (i.e. children) and convert it into something more useful (i.e. employable adults). Our research suggests however that the character of a school's output depends largely on a single input, the characteristics of entering children.'

There is no lack of prophets of doom like Illich who claim the School has failed society. Others like Everett Reimer go on to press panic buttons and proclaim: 'It is too late to reform the Schools. School is dead.' Ten years ago God was dead. Now it's the School which is the epicentre of discontent and disillusion.

The crisis which is now such a common theme on the U.S.A. scene goes much deeper than a crisis of confidence in the school's ability to guarantee equal access for all to the dubious benefits of a competitive consumer society. Nor is it a crisis which a change in government can banish simply by pouring vast sums of money into education or by appointing commissions —useful and necessary as both may be on the Australian scene.

Is the crisis in society or in the self?

The 'sixties and early 'seventies have witnessed a troubled society, and I believe the troubled society is the result of the troubled self, of modern man, as Carl Jung says 'in search of his soul'. For the troubled generation of the young it is a crisis of identity, of search for meaning, both inward, of the self, and outward, of self in society. Many of this generation blame the schools for giving them a stone, when they've wanted bread; they've accused the schools of being so busy in preparing them for finding a job that they've failed to help them find themselves.

In a recent study of the latest 'Jesus Freak' movement whereby the young seek identity and salvation, Peter Marin, an education writer in 'The Saturday Review' made some penetrating comments in an article which he titled 'Children of Yearning'. (Saturday Review, May 6, 1972, p. 62.) He says:

> 'Survival depends on resonance and depth of self, the existence at the centre of some one, a self strong enough to absorb its strains.';

and then he uses a most illuminating phrase to describe what is happening to the self in so many of the youth movements and cults.

> 'The self becomes a vast and vulnerable suggestibility. Nothing is generated from within. Instead impulses flow from the outside in a perpetual kind of *imprinting* at odds with *ripening*.'

Part of Peter Marin's analysis I disagree with—his contention that 'nothing is generated from within'. The revolt of youth against so many institutions of Western society has come, I think, from some deep disquiet within, from a disillusion with a society which has ceased to make sense to the individual and with which he could therefore no longer identify himself. The crisis is one both of social meaning and personal identity. So, I believe, the revolt

has been generated from within – because many of the institutions of society have failed to respect individual worth and human dignity. The fight against war, poverty, race, pollution, became the primary concern of the young, because these evils no longer appeared to be the concern of the previous generation. The young have made it clear also that they believe the institutions of Education have failed them. The Universities and now the secondary schools have become epicentres of discontent—and we must accept the fact that the reaction of the young to the institutions of education is not only a gut reaction against anything which can be lumped under the umbrella term of 'Establishment' (with capital E) but an intellectual revolt against much in our education which has ceased to be relevant.

But, having said this, I think Peter Marin has drawn attention to a real danger that the spontaneous and genuine impulse from within may be exploited by impulses from without and that some youth movements may imprint rather than ripen the individual. This is why he sees both the Jesus Freak Movement and the drug cult exploiting the inward impulse and imprinting it with an illusion that is unrelated to the realities of living responsibly in society. This is why he says that 'imprinting' is at odds with 'ripening'.

John H. Fischer of Columbia University has, I think, the same danger in mind when he says that the aim of education is not only to see that the individual makes the most of what he has it in himself to become but that it should 'lead the individual to an understanding of the world and of nature deeply enough so that he will want to live in it with responsibility and grace'.

The danger is that the young may so dislike what they see in society that they may not want to live in it or still less to take responsibility for making it the sort of society which meets their inmost needs.

The educational process however is concerned primarily with the 'ripening' the 'maturing' of the self and it must therefore be concerned with what happens to the self. Jersild defined the self as having powers both of assimilation and rejection. The self must retain this autonomy: it must be strengthened to reject the attempts of others to manipulate, imprint, exploit or overpower it.

It is this autonomy, this right to say yea or nay to external pressures which is the source of its growth. The self is no mere automaton. It can determine its own unique response. Deny this and the seed becomes a mere husk.

Archibald Macleish in an address given in 1970 at Hampshire College, Amherst, Massachusetts, used a similar expression when he spoke of the 'withered' self. This 'withering' he said is the result of a breakdown of the balance between society and self through the dehumanizing of our culture. 'It is the precarious balance between society and self which defines culture at any one time.'

When the balance is upset as it is today, the words of the poet W. B. Yeats come true:

'Turning and turning in the widening gyre
The falcon cannot hear the falconer,
Things fall apart, the centre cannot hold.'

Macleish sees the task of education as restoring the precarious balance between society and a self, which has lost touch, like the falcon, with the holding centre.

The crisis therefore is in the self, and not merely in society. *Has then the process going on in the schools 'withered' rather than 'nourished' the self?*

In his best seller 'Crisis in the Classroom', Charles Silberman professed himself appalled by what he called 'the mutilation of spontaneity, of joy in learning, of pleasure in creating, of sense of self'.

The problem, I feel, lies in our secondary schools rather than in our primary schools, where, by and large, a quiet revolution has been going on ever since the eleven-plus examination for sieving entry to secondary schools was abolished.

One wonders what happens to change the curious, eager, imaginative and confident ten-year-old into the sometime blasé, frustrated, unimaginative sixteen-year-old, who is an easy prey to those who exploit his lack of confidence in his own identity and imprint a stereotype for him to identify with and conform to.

It must surely be something that goes wrong in the critical period of adolescence when the central task is that of self-definition and the young person seeks to learn who he is and what his feelings are.

The secondary schools have been operating however more like factories, processing, testing, classifying, certificating. Though much of the external pressure of examinations has been at least modified, most of us who are teachers are still caught up in the pass-fail complex and see our job as that of getting the raw material successfully processed. The self, however, is withered by continued threat of failure. Fear of failure saps strength, discourages effort and damages self-respect, continual failure lowers self-esteem. Many indeed (to use a phrase from the U.N.E.S.C.O. report 'Learning to be') are 'relegated for life to the ghetto of their own failure'. The most recent studies of the drug problem indicate that there is a definite correlation between a school problem and a drug problem and one of the main characteristics of the high drug risk is that he has low self-esteem and relates poorly to staff and fellow students in the school situation.

Another factor which has a self-withering effect is *the tendency of secondary schools to limit the area of recognized achievement* and hence the opportunities for the developing child to find himself. The scholar and the athlete have assured status, but schools are still slow to recognize the importance of educating the emotions and stirring the imaginations. Illich accuses schools of 'smothering the horizons of the child's imagination, of repressing love and in encouraging fear'. It may well be that the schools mirror society and that schools cannot change until society rates more highly creativity and independent thinking, rewards its artists as highly as its

professional footballers, appreciates the qualities of tolerance, compassion and understanding and sees persons as capable of human happiness and not merely of pushing aside a rival in the competitive rat-race.

The educational process is as much concerned with the emotions as with the intellect, with creativity as with rational thought. Schools therefore should give far more attention to the creative arts—'the fringe-dwellers' in our schools. These are for all, not only for the so-called non-academic. The educated man of the future will need to know what to do with his leisure as well as with his limited working life, but, more important, the self is nurtured by the imagination, by sensitivity to truth, beauty and indeed to moral values.

In 'The Rainbow Bridge', Sir Richard Livingstone, developing his earlier theme of the need for education to provide an 'habitual vision of greatness', says:

> 'Many men meet the gods but few salute them. Hence the importance in education of developing and feeding not only the intellect but the imagination by which the vision of greatness is seen'.
>
> (R. U. Livingstone, The Rainbow Bridge, Pall Mall Press, London, 1959, p. 176.)

Schools should be places of salutation—in Livingstone's sense. I am not arguing for the teacher setting himself up as a god to be saluted but I'm still less in favour of the school being a place where the young feel no reverence for anything or anybody. In my view the teacher is a bearer of values, or, to use a Macleish phrase, a trustee of culture. And it is the values, the culture, that are worthy of salutation and respect.

What worries me about some of the brasher young these days is their lack of interest in, still less of reverence for anything but the contemporary and their belief that there is no culture but peer-culture. The teacher therefore may be ignored as irrelevant. This may be partly the teacher's fault if he claims authority by virtue of the position he holds and not by virtue of the values he bears.

The role of the teacher is to be a trustee of culture—that is the basis of his authority and of his claim for respect.

One of the depressing effects which the secondary school seems to have on large numbers of its inmates is that they find little satisfaction in being there. The radical Christopher Jenks said that the primary basis for evaluating a school should be 'whether the students and teachers find it a satisfying place to be'.

This is much the same conclusion as Professor Jeffreys came to:

> 'What kind of a community the School is matters more than what instruction is given.'
>
> (M. V. C. Jeffreys 'Personal Values in the Modern World', Pelican A569, Penguin, London, 1962, p. 139.)

When Silberman analyzed the success of three particular schools in depressed areas he came up with the same answer in each case. Their success lay in what he called 'a warmer and more humane atmosphere'.

There are many schools which are still too much like either prisons or jungles depending on which partner in the educational process wields power. The way to reform lies in the *school being a humane place*, where persons, teacher or taught, are judged worthy of respect, and where mutual confidence is built up by encouragement and loyalty. The self needs such a humane setting for nourishment and growth.

If the school does not provide this, it is unlikely the child will experience much humaneness in a society which appears to be more indifferent to human needs.

I don't know how many of you are fans of the French actor Jacques Tati. In his last film 'Traffic' he embodied the rather wistful character of man, humane man, affirming his humanity in a world of mass-produced cars rushing madly by, bumper to bumper, on the freeway to nowhere. There is a pile-up and in a moment of incredible disorder a swarm of drivers has fast gathered to scream insults and threaten lawsuits at each other. It is only Jacques Tati who sees and responds to the need of a limping old man who uncomprehending finds himself and his car caught in a bush off the straight and broad way. Jacques leaves the tangled mess of the freeway to take the old man home. He gets no thanks, but turns up next morning at work unhurt and unruffled, the silent affirmer of the humane against the stereotyped, the mechanical, the mass-produced, the indifferent.

The school then must be a humane place for the educational process to be effective and the more inhumane and mechanistic the world becomes the more essential it is for the school to be such a humane place.

One is tempted these days to imagine that the Great New Deal in education will be brought about by a re-structuring of educational institutions. Certain structural changes would, I believe, make it more likely that individual potential could be developed and encouraged in our schools. For example, greater autonomy for each school both primary and secondary would lead in the direction of more freedom for the individual school to develop its 'personality', and this in turn would be reflected in a more confident use of professional freedom by the individual teacher and hence in a more humane atmosphere in the classroom which would encourage individual development. But even so, while admitting that changes in the system or in programs through commissions and committees may bring the millennium nearer this millennium will not come about simply by decisions from above but from within, basically from the teacher, and for this reason I would make *teacher education the spearhead of our effort*.

All that I have been trying to underline as important has really been directed to the teacher, for it is he who with the parent has the major responsibility for encouraging the child to make the most of whatever he has it in him to become, but he also bears a special role as what Macleish called a 'trustee of culture', or a bearer of values. He it is who has the opportunity to interpret society to the growing child, to link the present with the past so that the child will feel he is no alien in a strange land, but a 'citizen of no mean city'.

He may also develop in the child a confidence in his power to discriminate between the good and the not-so-good, and to make responsible choices, for on this confidence will depend ultimately the mature judgment by which he will see that society becomes humane and promoted the dignity of the individual. The teacher will see that the School itself is a microcosm of such a society, where there is mutual respect of age and experience for youth and the power to achieve. He will see to it that the school is related as closely as possible to the community which it serves so that at no time does the child feel he is remote from this community. Indeed he should know its pangs of unfulfilled promise as well as the warmth and security of the personal relationships a community can provide.

We hear much today of the need for the school to prepare children for the future shock of living in a world where the rate of change is to be the dominant characteristic. To prepare him for change and nothing more would be, I submit, to betray the deepest needs of the individual self, which still seeks those things that abide amidst the many that change and decay. In a world of change, where it is assumed men will change wives as often as they change jobs, some basis of permanence will become all the more necessary. The more impersonal the society becomes the greater the need for some element of permanence in personal relationships.

The twentieth century has not been the only period in history which has experienced the shock of change, though admittedly the process has been dramatically speeded up. The 16th and 17th centuries were periods of renaissance and re-formation, eras of the birth of new ideas and the formation of new institutions. But a Luther had 'ein festeburg' from which to withstand the force of present and future shock.

The great difference is that most men today have no 'feste burg' to replace 'Unser Gott', who was Luther's sure stronghold. I hold strongly to the belief that teachers are the main agents in the community through which values can be renewed and transmitted—or through which a new meaning, a new weltanschauung, a new stronghold may be discovered.

It is the quality and depth of insight that man has into himself that will bring about the renewal of values through which social and international harmony can be achieved. It may well be that the young today feel abandoned because the 'not-so-young' do not give of their experience or their insight nor dare speak of what they feel is of value. While parents and teachers abdicate and flee the stronghold, anxiety, insecurity, frustration, discontent and even withdrawal will be the characteristic features of the rising generation.

A new dimension therefore needs to be added to teacher education

If I call this a religious dimension, I shall risk being misunderstood by those who have rejected formal religion. Let me therefore call it a dimension of depth, which involves man in seeking to go beyond the temporary, the immediate and the expedient and down to the centre that holds, the source of creative power. Self-discovery, self-knowledge, leads one to the threshold of this temple of the spirit. The parallel injunction therefore to the Physician's

'Heal thyself' must be the teacher's 'Know thyself'. Only if the teacher has known within his own self this creative source will he be able to deal creatively with the child, the raw material of the educational process.

'The temple of the spirit' of which I speak is not unlike what Helen Haenke in the Saturday Australian of 27th January, 1973, called 'The House of Mind'. She used this term in addressing a prayer in poetic form 'to certain zealots who seem determined to dictate the course of education'. The prayer could equally well be addressed to all of us, zealots as we are, concerned with the process of education and with programs which we hope will change the course of education.

> 'Dearly beloved teachers,
> I charge and require you
> as many as are here present
> to accompany my child with a pure heart
> and humble voice
> and admit her to your fellowship
> and the communion of this House of Mind
> and your training in its service . . .
> As I have taught her good from bad,
> extend her wit to recognize their forms—
> since one cannot exist without the other—
> to the end that when she makes a choice
> it's done advisedly. Then good or bad
> be on her head. I'll praise success—
> her marriage to this Mind—
> but not blame if you fail
> so long as you give her, in this House,
> all that was given-me-in-love,
> for love.'

LEARNING—A SOCIOLOGICAL PERSPECTIVE

P. W. MUSGRAVE

1. Boocock's Contribution—in the traditional mould

Until perhaps the mid-1960s even sociologists defined learning as an area outside their discipline and their competence. However, in 1966 an American sociologist, Boocock, presented a paper, 'Towards a Sociology of Learning', which created sufficient interest for her to expand it into a book, *An Introduction to the Sociology of Learning*, published in 1972.[1] Boocock's synthesis was based largely on American work, though she did include some of the small quantity of relevant research then under way in Britain, namely that by Bernstein on the ways in which acquisition of different linguistic codes influenced success at school. But she was deeply influenced in the way in which she defined and delimited her area by the currently accepted paradigm of the sociology of education. This specialism was seen largely in terms of what in Britain for three centuries has been called 'political arithmetic'. Thus, much pioneering work had been done investigating the chances that the different social classes had of success in the educational system. The well-known studies by Floud and others in Britain and by Coleman in the U.S.A. are examples.[2] In such work the focus was on the child and through him on the way in which different familial backgrounds influenced him. Using this conceptual framework attention was diverted from the responsibility of the teacher for what the child learnt from the influence of the way the school was structured, and from the content of the curriculum, all at a common sense level vital parts of learning, the importance of which had been indicated as early as 1932 by Waller in his remarkable book, *The Sociology of Teaching*.[3]

Yet, looking back in 1973, wiser sociologically by seven years, we can see that, though Boocock's paper of 1966 was a pioneering effort, even her focus on the child was an incomplete one. Her book (1972) remarkably shows no evidence of the changing emphasis towards a more phenomenological sociological theory that occurred, particularly in the U.S.A., between the dates of publication of her paper and her book. The first part of the book entitled, 'The Student', is a remarkably fine synthesis of much of the American evidence concerning correlations between familial circumstance, sex and I.Q. and educational achievement, that is, of the political arithmetic of learning. The second part, named 'The School', suggests analysis of a more phenomenological nature, since the titles of two of the chapters cover role relationships

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[1] S. S. Boocock, 'Towards a Sociology of Learning', *Sociology of Education*, 1966, 39, 1-45; S. S. Boocock, *An Introduction to the Sociology of Learning*, Houghton Mifflin: Boston, 1972.

[2] J. E. Floud, A. H. Halsey, F. M. Martin, *Social Class and Educational Opportunity*. Heinemann: London, 1956; J. S. Coleman and others, *Equality of Educational Opportunity*. U.S. Government Printing Office; Washington (D.C.), 1966.

[3] W. Waller, *The Sociology of Teaching*. Wiley: New York, 1932 (reprinted Russell and Russell: New York, 1961).

and the social systems within the classroom. But very largely the studies reported are traditional in that they use questionnaires or rely on variables which in both cases depend on categories chosen by the researcher and imposed on the children.

Another recent, well-received sociological work that is concerned with the same area is Jackson's *Life in Classrooms* (1968). In this book the second chapter is concerned with students' feelings about school and the third with involvement and withdrawal in the classroom, both central to the process of learning. In Chapter 2, 15 of the 40 pages actually report students' feelings and all the data comes from questionnaires. Jackson himself is a little critical of the methods used to gather the data he quotes, since the comments that 'When we force students to describe themselves as being either "for" or "against" school, we do obtain a crude picture of their views . . . at the cost of ignoring the psychological richness of student opinion'.[4] In chapter 3, 5 out of 26 pages report college students' *recall* of the attention they gave in school lessons as presented in studies carried out in the early 1950s and 1960s. In other words, Jackson is trying to generalise to contemporary learning situations from data of somewhat doubtful validity, relating to conditions in the schools of the early 1940s and 1950s (even though gathered by students of Bruner!).

Clearly the direction in which Boocock was driven by her model of a sociology of learning was such that she only asked questions about learning from the viewpoint of the teacher and never of the child. Because such questions had never been asked evidence was not available to Jackson when he needed it for his own synthetic analysis. Clearly any sociology of learning that has pretensions to completeness must consider the viewpoint of both the main parties to the transaction.

The Phenomenological Revolution—a new view

Learning has been seen in the past very much as a passing-on of material. This is the Durkheimian tradition which ultimately became so deterministic that in 1960 Wrong was spurred to publishing a famous paper, 'The Over-socialized Conception of Man in Modern Sociology'.[5] Certainly for one reason or another since the late-1960s more emphasis has been put by sociologists, as Wrong recommended, on the making, rather than the taking of meaning. A seminal book here was Berger and Luckmann's *The Social Construction of Reality* (1967),[6] which, astonishingly, receives no mention in Boocock's book, published five years later. The very title of this work shows the new phenomenological stress. Thus, in Berger and Luckmann's view the reality around us is created anew in social situations on each occasion upon which it is learnt. Meaning may become institutionalised in cultures, but humans created this effect and, hence, they can reverse it. In

[4]P. W. Jackson, *Life in Classrooms*, Holt Rinehart: New York, 1968, p. 55.

[5]D. H. Wrong, 'The Over-socialized Conception of Man in Modern Sociology', *Psychoanalysis and the Psychoanalytic Review*, 1962, 49, 53-69.

[6]P. L. Berger and T. Luckmann, *The Social Construction of Reality*, Penguin—Allen and Unwin: London, 1967.

other words, the learner can influence the process whereby reality is recreated. He can react or make meaning as well as be affected or have meaning made for him. In one recent study Denzin has shown how pre-school children go about this dual process. His sample did not define their day as 'school', but as 'work'. They were part of the 'interacting moral order' of the classroom, built around tasks and a timetable in such a way that the children could not go it alone, but needed the teacher to help them. For their parents the pre-school's function was seen to be custodial and the provision of social education, but for the little children concerned their work was 'constructing social orders'.[7] Here probably the children were having meanings made for them as often as making meanings for themselves.

There is only one theoretician who has begun to analyse in any serious sociological fashion the process of learning using the transactional model hinted at here. This is Freire who, because he is a Marxist, naturally sees learning not merely as a transactional, but as a dialectical, process. Learning occurs through negotiation which alters both the learner and the teacher. Both in fact learn. This being so the curriculum is unpredictable. It emerges from a series of ongoing situations. Freire worked in adult literary programmes in South America where he achieved astonishingly quick results by organising learning experiences based on the suggestion of his students. Thus, they learnt to read and write words like 'landlord', 'rent' and 'exploitation'.[8] Freire, of course, became very unpopular with the established regimes, since, where learning becomes a dialectical process of this type, cultures almost inevitably change. The rate of change will in large measure depend upon the ratio between the alternatives posed earlier, namely upon how much meaning is made by the learner as opposed to how much his teacher makes it for him. Obviously the relative power of the parties to the dialectic are important here, but it is not crude or manifest or immediate power that matters. A study by Dumont and Wax of the reactions of Cherokee Indian children to their American school is relevant here. These Cherokee children had been firmly socialised into their own ethnic culture so that they desired to be like adults in that culture. They, therefore, only worked at school when the tasks seemed to them related to these desires. They were, though apparently young, small and powerless, able by 'delicacy of intercourse' to withdraw from negotiating learning with their teachers. They played shy, were calm, or remained silent. Till the teacher changed his ways they politely refused to co-operate.[9]

All this may seem very obvious to practising teachers and to be one more example of how far theorists can move from the real world, but unfortunately we have some evidence to indicate that, though teachers may say that they are committed to teaching according to a particular pedagogical style, once they start teaching they unconsciously behave in

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[7] N. Denzin, 'The Work of Little Children', *New Society*, 7 January, 1971, 12-14.
[8] P. Freire, *Pedagogy of the Oppressed*, Herder: New York, 1971.
[9] R. V. Dumont and M. L. Wax, 'Cherokee school society and the intercultural classroom', *Human Organisation*, 1969, 28, 217-226.

a very different and usually far less idealistic manner.[10] Furthermore, when they do evaluate their own curricular intentions, and this process has a low priority with many, certainly English, teachers,[11] they tend to blame their pupils rather than themselves. For example, that Germanic-sounding portmanteau noun pupil-motivation is a great catchall for our failures with children. Furthermore, we all claim to be child-centred these days. If this is so, should we not at least know what our students' views are about learning?

In this connection and using the dialectical model of learning suggested above many questions immediately arise. For example, a simple question is: how does a child define learning? Some data will be reported later in this paper that provides an initial and very tentative attempt to begin to answer this question. There are, however, more complex questions, which could seem worthwhile investigating on the hard-headed ground that answers would have a pay-off for the practical business of teaching. Three examples will be given. First, how does a student know whether or not he has learnt what the teacher hopes that he will learn and how does he indicate to the teacher that he has learnt? All teachers have experienced a situation where their students actually learn something very different from what they perceived themselves to have taught. Knowing how to analyse this situation might help us to avoid it in the future. Second, what does a student take for granted in any learning situation? Very often teachers expect their pupils to know the unexpressed assumptions that are obvious to a teacher when he gives instructions. How often do children fail to learn, because they operate what is known technically as 'the Et Cetera Assumption' differently from their teacher so that they either fail to fill in the missing assumption or fill it in differently from the teacher?[12] Finally, how does a student know whether to initiate interaction with a teacher or not? Frequently, teachers say to students, 'Why didn't you ask me?' but we are never sure that the students realised that the teacher was available to them. One type of work that might be helpful here covers how conversational openings are sequenced. Schegloff has shown how those calling and answering on telephones can indicate to each other the type of conversation to which they want to commit each other.[13] In a somewhat similar way teachers may use gambits, either consciously or unconsciously, to give cues to their students about their intentions. The problem is whether their students recognise these cues or not.

In all these cases teaching is being seen as the management of interpersonal interrelationships. However, successful management depends upon the teacher and the student being mutually attuned. The teacher knows how he defines the situation and can presumably present this definition success-

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[10]N. Keddie, 'Classroom Knowledge' in (ed.) M. F. D. Young, *Knowledge and Control*, Collier-Macmillan: London, 1971, pp. 133-160.

[11]P. H. Taylor, *How teachers plan their course*, N.F.E.R.: London, 1970, p. 75.

[12]See A. V. Cicourel, 'The Acquisition of Social Structure: Toward a Developmental Sociology of Language and Meaning', in (ed.) J. D. Douglas, *Understanding Everyday Life*, Routledge and Kegan Paul, London, 1971, p. 14.

[13]E. A. Schegloff, 'Sequencing in Conversational Openings', *American Anthropologist*, 1968, 70, pp. 1075-1095.

fully to the student whose definition of the situation he believes he knows, whether the student can present it successfully or not. Yet it is just this knowledge of the students' definition of the learning situation about which we have earlier seen we have little data except that gathered in terms structured by adults.

Paralleling the recent emphasis by sociologists on phenomenological theory there has been a growth in interest in various theories of deviance. In the last five years or so the phenomenological approach has been applied to this area. The results have applicability to the classroom and thence to the process of learning. Deviance can be seen to depend upon the existence of 'rules of relationship' that govern 'persons (who) are either in or out of relationships that are either reciprocated or nonreciprocated'. Such rules and relationships are specific to time and place. Thus, in Shibutani's term each situation, for example, a classroom or a learning situation, can be viewed as a 'social world'.[14] Children must discover what the local rules are for each classroom or teacher that they visit. Within these rules 'normal deviance' can occur, that is, the expectation exists that within a certain range of behaviour some rules will be broken to a certain minimal extent. Furthermore, those who are labelled deviant will offer 'accounts', depending upon shared common-sense theories and upon seeming plausibility, either as excuses or as justification of their rule-breaking.[15]

Students in schools develop techniques for coping with such situations. Werthman has shown the manner in which adolescents negotiate with their teachers over the grades that they are awarded. They evolve hypotheses about how teachers award grades and then compare the sets of grades given with their hypothesised criteria for that teacher. If the students disagree with a grade, they take action which often results in rejection of the authority of the teacher who therefore labels them as deviant.[16]

There is additional evidence that can be analysed in the terms being used here and that relates directly to learning in Holt's book, *How Children Fail*, though once again this data relies almost entirely on observations by an adult, though a very perceptive one, and, therefore, may not give a true impression of children's views of learning. Holt believes that the mainspring driving students to react to a teacher's attempt to make them learn is fear of failure. He identifies a number of strategies that children use to avoid being cast as academic failures, that is, as one type of normal deviant in a situation where 'schools are a kind of temple of worship for right answers'. There are, for example, the mumble strategy; the guess-and-look strategy, where a child watches the teacher's face and guesses; the opt-for-failure strategy, where total failure is chosen as the next best alternative to success,

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[14]N. K. Denzin, 'Rules of Conduct and the Study of Deviant Behaviour: Some Notes on the Social Relationship', in (ed.) J. D. Douglas, *Deviance and Respectability*, Basic Books: New York, 1972, espec. pp. 116-131.

[15]M. B. Scott and S. M. Lyman, 'Accounts, Deviance and Social Order', in (ed.) J. D. Douglas, *op. cit.*, espec. pp. 89-90.

[16]C. Werthman, 'Delinquents in schools: a test for the legitimacy of authority', *Berkeley Journal of Sociology*, 1963, 8, pp. 39-60.

and the play-dumb strategy, where, especially if a child looks cute, the teacher is more likely to help than condemn him when he appears baffled or frightened.[17]

Holt feels that he himself, like many teachers, uses competition for his approval as his most powerful reward in teaching. He does admit that older students may be more able to cope with failure or deferred success than the younger ones. In a recent comparative study, based on interview and questionnaire, of secondary students in the U.S.A., England and Australia Stevens found that adolescents in all three countries were 'comparable in holding teachers partly responsible for lack of enjoyment of lessons, and in associating enjoyment of a subject with success in it'.[18] This finding contradicts Holt's feeling about his own pupils, who were of primary age. From his own experiences he believes that to children all teachers seem good; 'it would never occur to them that it was this nice lady's fault that they could not understand arithmetic; no it must be their own fault, for being so stupid.[19]

It is because there are such contradictions in adults' views of what children feel about learning that the time has come to attempt to discover directly from children what they really do feel. In brief, the framework of analysis being used here sees learning as a negotiated process between parties with more or less power. Both sides to the transaction must construct definitions of the learning situation by interpreting the cues of the other before they can maximise their mutual benefit. Therefore, it is not enough for efficient learning for teachers to use empathy, memory and imagination to describe how children define the learning situation. They must *know* so that they can discover where any misperception on their part is hindering their students' learning.

3. A Pilot Study—whose view? mine or theirs?

i) Method

For this reason a pilot study was initiated by the writer into the first and apparently the simplest of the questions given above, namely how do children define learning in a classroom. Three classes were asked to 'write about a page on how you learn in a school class'. One class of 39, 21 boys and 18 girls, was a Form 2 from a state high school in a working class suburb of Melbourne. A second class of 27 was a Grade 6 in a similar area; unfortunately the exact number of each sex could not be identified. The third group of about 15 came from a Form 2 class in a Melbourne progressive school; the data provided by this group was scanty and added nothing to that yielded by the first two classes. Internal evidence from the responses indicates that the children answered freely and openly. The rationale behind this method was that the essay could act as a cue for the children to indicate how they defined learning even though their construction of this segment of

[17] J. Holt, *How Children Fail*, Penguin: Harmondsworth, 1969, espec. pp. 27-9, 68 and 95-6.

[18] F. Stevens, *A Place for Learning*, Hutchinson: London, 1972, p. 123.

[19] J. Holt, *op. cit.*, p. 143.

social reality would be much influenced by the ways in which teachers had attempted to make them learn during their school careers to date. The essays were read three times. On each occasion the writer tried to let the children speak 'from their condition' and to empty himself of adult preconceptions of how children should define learning. On the last two readings the generalised structure of the learning process as defined by the children that was yielded by the essays seemed identical, though somewhat different from the impression gained from the initial reading.

The first structure had as its components: the place, the manner, the time, the content and persons involved. There was much doubt in the writer's mind concerning whether this structure came from himself or from the children and this is the major problem in research of the type attempted here. Fundamentally these essays are akin to an open-ended questionnaire, where a cue is given so that all respondents start from one point, but, since they are free to go where they wish, their responses may not be comparable. Furthermore, no hypothesis is suggested so the data receives no initial shaping. There is the initial advantage that the danger of producing a self-fulfilling prophecy is avoided, but the difficulty occurs of knowing whether the interpretation put upon the data is that of the respondents or of the researcher. Given time there are possible solutions, namely to replicate the process in some way or to have a second researcher read the responses and to compare the structure that he finds with the initial interpretation. In this case the second course was adopted. A colleague read all the Form 2 responses and by and large agreed with the interpretation of the writer.[20]

ii) Results

The perception of learning that these children apparently held will first be given in brief after which each component in it will be substantiated by reference to their responses. Learning was seen as a process i) having content, ii) with an aim, iii) using various methods, in which iv) the teacher and v) the learner both had a part, and in which vi) individual differences of both students and of teachers were important.

i) *Content*. Almost every child replied in terms of school subjects. Learning was defined not so much in terms of a general process, but in terms of the subjects offered by the school. Furthermore, this offering was by and large accepted uncritically. There was a definite tendency to see two categories of offering. One consisted of the more academic subjects such as English, mathematics, science, French, social studies and history, while the other included the more practical subjects such as art, woodwork for boys or home economics for girls and games which were more often mentioned by boys. These subjects were seen in a very compartmentalised fashion even by the students in Grade 6, who were largely taught by one male teacher. Links were not, therefore, made between subjects. Furthermore, only one student, a primary child, mentioned a sequence of learning, moving from

[20] I wish to thank my colleague L. C. Ingvarson, a social psychologist, for giving his time for this purpose and for a number of suggestions, particularly one concerning the different ways in which boys and girls viewed learning through discussion.

easy to more difficult work and building on what had gone before. Though the cue offered to the children directed them to learning at school it was notable that not one out of more than 80 students mentioned learning at home. Therefore, no comparison between content or method of learning under the influence of the school and by other means was possible.

ii) *Aim.* Holt reported that his primary children 'see school almost entirely in terms of the day-to-day and hour-to-hour tasks that we impose on them'.[21] This lack of even relatively long-term aims was not really apparent in the students here, especially in the case of the Form 2 children who were not much older than some of the children whom Holt taught.

All the students in this sample saw that they could succeed or fail in their learning. Many specified dimensions along which learning could be aimed. Thus, several of the primary children saw themselves as being prepared for high school. One girl saw the learning of 'manners' as important, whilst several others referred less explicitly to the non-academic, as opposed to the academic, aspects of learning. The secondary students made this division more definitely and several almost wrote in terms of behavioural objectives for subjects. 'Facts' were to be learnt in academic subjects; learning French helped understanding of a foreign country; things like tables were to be made in practical subjects; technical subjects were useful for future careers. In the non-academic sphere debates and drama helped one to speak properly and gave one confidence; consideration for others, both for peers and for teachers, was several times mentioned as a quality to be learnt at school.

iii) *Methods.* Much space was given to the social circumstances and the methods through which learning might occur and a remarkable number of different ways of teaching and learning were mentioned. One second form girl put into words the feeling that seemed to be behind several of the essays. 'All students learn things in different way(s) and take in things different with different subjects, as most teachers teach in different ways'. Quite clearly the children reacted differently to any one teacher. For example, some liked copying from the blackboard, whilst others did not. The only major difference between the primary and secondary students was that the former, who were taught in three groups within their class, realised this and knew which group contained the bright and which the less able ones.

Most of the students in both age ranges said that they were interested when they perceived themselves being active. As one second form boy put it, 'These subjects drive me up the well know(n) creek because I'm not using my brain physical(l)y'. Many apparently felt debates, excursions, and films were all worthwhile ways of learning, because they perceived themselves to be active. Yet for much of the time and for many of the students involved in such activities they were by some criteria more passive than when copying off the blackboard. One girl amongst the many second form students who were in favour of assignments noted that busy work could

[21] J. Holt, *op. cit.*, p. 36.

negate the benefits of what now in schools is often called 'research', saying, 'I don't think writing a whole lot of information of (sic) a subject into a book, without discussing it first, is good, because the information may be perfectly correct and in detail, but the student is not taking anything in. They, or at least I do, tend to "turn off" when having to write a lot of undiscussed information, and my mind goes blank, without learning anything'.

Choice, for example of the topic for a painting, was considered important for arousing and holding the interest seen as vital for much learning. The word 'participate', so ideologically fashionable today, occurred in two responses from second formers, one of whom also spoke of the virtues of an 'open class', though she admitted, as did several of the sixth graders, that under such conditions there were problems with those who did not join in. The sixth graders wrote of 'the fun way' as if this was a phrase that had come from their teacher and thought that enjoyment guaranteed the interest that conquered the disciplinary difficulties suffered by some teachers.

There was one major difference between the sexes in their views about methods. Twelve of the 18 girls mentioned 'talking' or 'discussion' as a means of learning and did so in general terms rather than in connection with a particular subject such as English, whereas only two of the 21 boys wrote in these terms.

iv) *The Teacher*. Students recognised the part played by the teacher in organising the conditions for learning in school. A second form boy said, 'but in most subjects we need the teacher to teach us better than ourselves'. More belligerently a girl of the same age wrote almost in terms of contemporary sociological labelling theory, 'I think if *some* teachers gave us credit for a few more brains it would be OK but we get treated too young or too old. We are *not* quite adults yet!'. This attribution of responsibility to teachers matches Stevens's finding from her study already referred to above.

Two second form students commented, 'Teachers don't have to be as qualified as they used to'. This view was supported by a belief that teachers now more often relied merely on working from books. One second form student wanted 'teenage teachers', presumably implicitly advancing the argument that they would be able to bridge the generation gap more successfully than older teachers.

The negative sanctions used by teachers of the usual type such as detention or the strap received much adverse comment and a major apparent difference between the sexes amongst the second formers was that boys gave more emphasis to punishments than did girls. In addition, when referring to one subject in particular several second formers noted the use of 'pressure' to make them work. One girl, using contemporary political jargon, commented, 'The teacher actually forces you to work in nonviolent ways'. Such more sophisticated views of sanctions were rarely explicitly stated, though the non-reflexive ways in which the students largely accepted the school's definition of learning upon which comment has already been made could be cited as evidence that, even where crude power was not used by teachers,

they had established their own definition of the situation by 'normative compliance'.[22]

v) *The Student.* To those in Grade 6 the main responsibility of the student was seen very clearly as being in the words of one of them 'to listen and co-operate', and not 'spoil it for others'. Their responsibility was seen in a more definite and individual way by those in Form 2. Several mentioned 'mood'. One girl, and there is an impression that this difference in the affective domain is related to sex, wrote, 'If I feel lazy I just switch off'. In addition, two students had noticed that they could learn 'by my mistakes', though in both cases they related this process to practical rather than academic subjects, in particular, a girl to art and a boy to woodwork.

vi) *Individual Differences.* These students wrote of individual differences in both themselves and their teachers, as the quotation from the second form girl given earlier indicated. In addition, another second former noted, 'Some people can work faster than others'; several of the primary children spoke of the 'dumb ones' in Group One and the brighter ones in Group Three. The teachers were seen to be showing their differences by their styles of teaching and by their personalities. In the secondary school the children met many teachers and could with ease compare their styles. In the primary school the presence of some specialists, for example, the librarian and the teacher of religious education, allowed them to make comparison with their class teacher whom they by force of circumstance knew very well (and, on the whole, liked). All readily expressed their likes (e.g. variety of method) and dislikes (e.g. 'horrible voices') in teachers. Even in one class the same teacher or the same quality in or method used by one teacher could be liked by some and disliked by other students.

This process of comparison was most clearly expressed by one sixth grader who gave her educational autobiography in brief year by year. It would seem that students gradually through their own past experience and by hearsay construct a stereotype of the teacher and the student with which they compare their current learning experiences. In this way they pass judgement on the part that their present teacher(s) and peers play in their learning. The evidence cited here is admittedly drawn from a restricted number of students. A further disadvantage is that it covers a narrow age range. Stevens found that Australian students saw the period between Grade 6 and Form 2 as the 'good stage in school life'.[23] Thus, evidence from other, and particularly from the later, and more difficult, stages ought to be compared with that reported here. Yet even on this data the matching of pupil and teacher so that learning results seems an immense problem especially where the school, as may legitimately and, indeed, must inevitably be the case, has educational goals that run counter to the individual desires of students.

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[22]A. Etzioni, *Modern Organizations*, Prentice Hall: New York, 1964, pp. 59-61.
[23]F. Stevens, *op. cit.*, p. 64.

4. Conclusions

Although Boocock pioneered the concept of a sociology of learning, in her most recent writing she clearly has not taken account of major developments in sociological theory, more especially of the new, and now linked emphases on phenomenology and deviance, so that she has failed to consider the definitions of learning held by those doing the learning, namely the students. Because of the focus of past research work remarkably little data does exist in this area and what does has largely been structured by adults rather than by the students themselves.[24] Indeed, the sociologist, Jackson, whose conceptual framework raises questions about students' views about learning had in 1968 already half-hinted at its absence.

A more fruitful model for a sociology of learning has been suggested here. This stems largely from the Marxist concept of dialectic rather than the supposedly neutral and traditional sociological concept of transaction. Both parties to a learning experience are seen as involved in a process of negotiation in which both are influenced and in which relative power positions, claimed or given, will be important. In developing such a model questions concerning how the two parties define their positions and the process of learning are raised, as are problems of communication of the rules of the particular interrelationship concerned.

Here a tentative beginning has been proposed for an answer to the question: how do students define learning in a classroom? The suggestion is that certainly in the age range between 11 and 13 in traditionally organised schools students see the content of learning in terms of very compartmentalised sectors of knowledge. They appear at the moment to accept without criticism what is offered to them by the school, namely, in Bernstein's terms a curriculum made up of a 'collection' of disparate items.[25] However, the occasional use by second formers of such words as 'participate' and 'open' forces one to ask whether the school's definition of learning may not soon be challenged even by junior secondary students in much the same way as their senior peers and tertiary students have done. This curriculum is seen as aimed at various purposes and taught by many methods, which suit individuals, whether pupil or teacher, differently. Both student and teacher have responsibilities in bringing about a successful outcome to the process of learning.

Further research and thought about the questions raised and answers given in developing a fuller sociology of learning would seem to have some pay-off in teaching in that teachers will have a fuller knowledge and a more useful model of the social reality of the classroom. We shall never avoid a situation where students have feelings of ambivalence towards

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[24]Two other works which might have been expected to yield relevant data were found to be remarkably barren in this respect, though apparently fertile in others, namely, E. Blishen, *The school that I'd like*, Penguin: Harmondsworth, 1969, and *The School of Barbiana*, Penguin: Harmondsworth, 1970.

[25]B. Bernstein, 'On the Classification and Framing of Educational Knowledge', in (ed.), M. F. D. Young, *Knowledge and Control*, Collier-Macmillan: London, 1971.

school since, as Jackson has said, these 'arise in part from the inevitable mismatch between individual desires and institutional goals'.[26] But an increase in our knowledge about students' and teachers' definitions should lead to less conflict and to a realisation in both students and teachers of the sources of such conflict as inescapable. A similar dialectical view of learning in the universities has led to the incipient demise of the god-professor. Perhaps we shall soon see a similar fate for the god-teacher, although, since education in essence is about changing students towards some given and justifiable goal, the coming death of these two god-figures need not see their replacement by another, the god-student.

[26]P. W. Jackson, *op. cit.*, pp. 60-1.

LEARNING AND TEACHING IN THE HIGH SCHOOL AND UNIVERSITY

W. M. O'NEIL

As my own experience of teaching has been largely in the university I shall inevitably display some biases. One of them which appears in this talk is what some may consider an undue concern for the scholastic elite. I do not consider that the less able should be neglected or that they should tag along behind the elite. But I consider that in providing properly for the less able we must avoid doing any disservice to the elite. In the long run that would be to do a disservice to the education of the less able for we would be denying them the abler teachers they need.

In these days when egalitarianism and levelling are popular, I recognise my temerity in recognising and in wishing to cater for a scholastic elite. By scholastic elite I am referring to those with high level scholastic ability and with strong scholastic interests. I am not referring to some social or economic class elite or, as we have a fair amount of social mobility, some 'hereditary' elite. I do recognise, of course, that the scholastic elite I have in mind is drawn in undue proportion from the upper socio-economic classes. I am just as interested in the small proportion to be drawn from the lower socio-economic classes and wish to see barriers in the way of the potential scholastic elite in these lower classes removed. The barriers have many bars in them, some directly financial, some to do with lack of scholastic or cultural stimulation and encouragement in the home and the immediate community and some to do with a positive encouragement to leave school almost as early as possible to enter immediately lucrative employment.

I do not hold that the main function of the high school is to prepare pupils for their entry to and effective use of the university or other tertiary institution any more than I hold that main function of undergraduate courses is to prepare the students for post-graduate studies. But as some high school pupils, indeed a big proportion of the bright ones, do go on to tertiary education and a big proportion of the brightest undergraduates go on to post-graduate work, I feel it would be a mistake not to make some special provision, particularly in the senior years of high school, for the proper preparation of these abler pupils for tertiary education and to pay some attention to those in undergraduate courses who show some signs that they may appropriately go on to post-graduate studies.

I shall not say much about the content of the curriculum in the high school and in the university, a term I shall use in a loose way. Obviously in the latter the content may be more limited in scope though greater in depth. In professional degree courses the criteria for selecting the content of subject-matter should include future professional needs, though some broader considerations should also be taken into account. In an Arts or even a Science degree course some attention should be paid to future career needs, though broader educational considerations are likely, and properly

so, to be given greater emphasis. I believe it is desirable to allow the election of courses for an Arts or a Science degree to remain sufficiently open and flexible so that provision is made both for specialisation and study in great depth in a limited area and for a broad spread over a range of diverse studies. The danger in the latter is that unless the student receives good counselling he may end up with an array of what turn out for him to be unconnected fragments. Perhaps university departments operate in too great isolation, making no attempt to find interconnections with neighbouring departments. It is not enough to say that the student will find these for himself for generally he does not. Indeed it is my impression that even within departments too little effort is made to bring out the interrelations between the several parts of the department's subject-matter.

I believe that the high school curriculum for the brighter pupils should have a degree of compulsory breadth or spread, though it should also allow for some specialisation and variation in emphasis. Though all the bright pupils should not necessarily end up with the following list of subjects, they should end up with a fair spread of subjects chosen from amongst them and to have at an earlier stage studied all of them:

> English, a second language, a social science, mathematics and a natural science.

I am quite ready to include for those who want them art and music, and especially for those not wanting to come to the university, a number of courses in the useful arts and sciences.

Practically every pupil sitting for the N.S.W. Higher School Certificate Examination presents mathematics and science in some form or at some level. English is compulsory. History, ancient or modern, Economics and Geography have large and partly overlapping candidatures, which in total must include most candidates. There has been, however, a deplorable decline in the numbers presenting a foreign language. I regard the decline as deplorable for two main reasons. First, one's understanding of English language and literature is enhanced by some mastery of another language and some knowledge of the literature in that language. It is not enough to say that the best of foreign language literature is available in English translation. That is a modest substitute for the understanding that would be gained by being able to read it in the original, but it is no help whatsoever in understanding one's own language. To do that properly one needs to get outside it and grasp how another language does what we are trying to do with ours. I am willing to accept the argument that those with no talent in Art or in Music should be not forced to study one or the other or both (but letting him have a brief contact to let him establish whether he has any talent and interest or not is another matter). Many pupils have little talent for English but we consider that, whether talented or not, they must make an extensive if not intensive study of it. We have a similar view about mathematics. Though we may not all be able to differentiate and integrate at least we should be able to carry out some useful everyday calculations. I believe that we should have a similar view about a second language. Indeed if the teachers were available I would urge that all but the intellectually retarded in the last couple of years in the primary school should learn a foreign

modern, preferably Indo-European, language. The emphasis in such learning should be in my view on the use of the language—listening to the spoken form of it with understanding, reading it, speaking it and writing it with some emphasis on accuracy but little emphasis on the formal grammatical rules which could be saved for the high school.

Having cursorily and usually without justifying argument outlined my preferred content of high school and university curricula, I shall now turn to what I consider the objectives we should have in mind in our teaching and in the pupils' and students' learning. I could use Bloom's taxonomy but I should prefer to modify his categories a little because I consider his categories more related to the analysis of examination items than to learning objectives.

My first objective or rather set of objectives is cognitive. It involves 'knowledge about', though this is often aided by 'acquaintance with'. One may have knowledge about the consequences of placing zinc in hydrochloric acid solution in a sounder way by having seen zinc placed in hydrochloric acid. One can hardly have acquaintance with Henry VIII and his several wives, though something like it may be gained through pictures, especially human 'word pictures' of them. What one has knowledge about may range from specific bits of information to principles, generalisations, concepts and the like. I don't like the distinction between factual knowledge and comprehension or the distinction between comprehension of principles and their application, not because these are not real distinctions but because I believe that all 'knowledge about' should involve a degree of comprehension and applicability by the person who has it. It is true that we may in examining be satisfied by establishing whether the examinee has a particular piece of information either to the level of recognition or to the level of reproduction without worrying about the degree of comprehension or whether he can understand without worrying about whether he can apply some principle or concept. But in teaching and learning we should always stress comprehension because it makes the learning so much easier and so much quicker, and because comprehension of principles and concepts makes the understanding of 'facts' easier, and because the trying out of principles, concepts and rules by application deepens the understanding of them.

My second objective or set of objectives involves skills. Some of these are manual, some are 'mental' but most involve some mixture of the two. They include skills of expression, skills of analysis, skills of problem solving, skills in assessment, skill or discovery or at any rate re-discovery. Though we pay great lip service in the university, we do precious little that is effective about the development of many of these skills. I suspect that the situation is as bad, if not worse, in the high school. Too often what is done with the aim of developing these several skills becomes relatively unprofitable busy work, insufficiently guided and relying altogether too much on what I shall describe as contingent learning. Perhaps mathematicians should be exempt from this charge because they seem to do quite well in the development of skills in mathematical problem-solving and analysis. Good language teachers do quite well in developing skill in translation but I wonder whether that is the most important skill to be developed. Skill in reading a dead language

would seem to be more important and skills in reading, writing (not just translating into it), speaking and comprehending would seem more important in the case of a modern language. Much practical work in science is insufficiently guided, perhaps through uncertainty about the objective of the particular exercise. Are we aiming to provide 'acquaintance with' or to give practice in some manipulative or 'mental' skill? In the more discursive Arts subjects the students are required to do a great deal of library work in supplementing 'knowledge about' or 'acquaintance with' gained in other contexts, in preparing for tutorials and seminars and in gathering material to be incorporated in an essay. Yet little is done to guide the students in the development of skills in using the enormous range of materials to be found in even a modest library. It is not enough to throw them in and hope that they will become effective swimmers in the library media.

My third set of objectives includes attitudes, interests, values and the like. These all have a strong affective element in them. I am continually amazed at the apparent lack of intrinsic interest manifested by most students in what they are asked to study. 'Will this be in the examination?' is all too frequent a question and all too few students browse, much less engage in active intellectual pursuit, in areas outside the straight-and-narrow of the syllabus. Yet I feel that the broadening and development of interests in intellectual matters should be an outcome of high school and university education. Most of us receive our values at our mother's knee and from the mouths of our peers. Schooling seems to have too little corrective effect and too little widening of the range of our values. Attitudes though having a strong affective component are basically beliefs. We talk a great deal about developing a critical, independent approach to issues wracked by emotion but in fact do little that is effective about it. The beliefs of our pupils and students are left at the end essentially as they were at the beginning. A few student stirrers do more to change them than we the teachers do.

Having rather baldly stated the objectives of secondary and university education, at least for the bright, in a quite conventional way, I should now like to turn to the modes of learning that are available in the high school and university.

First, there is contingent learning. What occurs together frequently enough comes to have a psychological togetherness. The sort of learning stressed in the old associationist theory and in the more recent conditioning theory is what I have in mind. The stress on contingency remains even when a further stress is placed on reinforcement through rewards of some form or other. Some contingent learning is necessary in both high school and university, whether it be *fero, tuli, latum* or *pi* approximates 3.14159. Unfortunately, too much of it is indulged in with too little attempt at comprehension or insight which is stressed as an important condition of learning in what is sometimes called cognitive learning theory. It is something of a technical question as to whether insightful learning can be subsumed under contingent learning. Whether insightful learning is contingent or not, there can be no doubt that whatever comprehension may be, it enhances learning in several ways: it makes it easier, quicker and more durable.

Second, there is learning through following a model. At its simplest level, it may be called learning by imitation. It is manifested in the 'accent' to be found in the English we speak, in many of the basic values we have, in our styles as teachers and in many other ways. As it plays so important a role in human learning I suggest that we should pay more attention to it than we do. Some teachers have a charismatic quality for their pupils and students that renders them readily accepted models. We don't always give sufficient weight to this quality. Of course, though charisma is in itself enough for effective learning, the quality of the model is important if the objectives outlined above are to be achieved. All in all this is a tricky matter.

I have noticed a trend in university teaching which is antipathetic to learning from a model. In times past a lecturer often took the whole year's course in a subject. Thus he was before his students long enough for them to warm to him (or not) and for them to assimilate his style and attitudes. Now the tendency is for a succession of experts to make their brief appearances in dealing with some often quite small segment of the course. I suspect something of the same sort has also been going on in the senior secondary school but to a much less degree.

Third, there is, especially in acquiring 'knowledge about', learning through symbolic communication, what my medical colleagues call didactic teaching. It may, of course, be less didactic than they tend to make it out to be and still be learning mainly through the pronouncements of the teacher. I shall call it instructional teaching. Some of it is necessary. I have learned a lot which I treasure in just this way from teachers, from colleagues and from books. I have, of course, acquired misinformation in this way through failing to ask 'What's your evidence for that statement?' The danger is likely to be greatest in fields outside one's special competence and this is the situation of most students. I should like to provide an example of my acquisition recently of such a piece of misinformation. As a relatively innocuous way of exercising my mind and of filling my time I have been engaging in some study of calendars, the Babylonian, the Egyptian, the Roman, the Mohammedan and so on. There are lots of books, big and small, board and narrow, to be read and lots of calculations to be made in the course of such an inquiry. By rights, I need the ability to read Latin, Greek, Accadian, Sanscrit, ancient Egyptian, Hebrew, Arabic, etc., in their various scripts, but though I have only a little Latin and less Greek I have been undeterred. A common story I have encountered is that Augustus added a day to the month Sextilis which he called August in order to make it equal to Julius' preceding month, formerly called Quinctilis and robbed February of a day to do so, and that furthermore he altered the subsequent 30 and 31 day alternation by robbing September of a day and giving it to October and by robbing November of a day and giving it to December. All this is pure fiction enshrined in a late nineteenth century article in *The Encyclopaedia Britannica*. I have read that the error goes back to John of Holywood or Sacrobosco in the thirteenth century, but as I have not read Sacrobosco I shall not claim that he was at fault. As the reformed Roman calendar left Julius' and Sosigenes' hands, February had 28 days (and 29 in leap years), Sextilis had 31, as did October and December, and September and November had 30. Augustus did nothing to alter the lengths of any of these months. All

he did was to cancel leap years between 8 B.C. and 8 A.D. in order to correct the excess of leap years between 45 and 8 B.C. which had occurred as a result of a misunderstanding of Julius' fourth year rule. While it is reasonable to take every didactic statement with a grain of salt, one would be in a continuing bind if one doubted everything one read or was told.

Fourth, there is what I shall call guided learning. The pupil or student in this regime is doing his own learning under the guidance of a skilled and patient master. He is set tasks, given some hints about how he should go about them, is corrected when he goes wrong, if not at first then when the master judges that the learner will not find out in reasonable time where and how he has gone wrong and how to start going right again. A good higher degree supervisor, a rare bird in my experience, acts in just this way. Possibly a good Oxford tutor and a good Cambridge supervisor may also do so. It is pretty hard to do so for 20 or more pupils in a senior high school class or for 150, 300 or 600 in a First Year university class. Small group university tutorials provide some opportunity for something approaching this activity but all too often they are used as supplementary mini-lectures or sessions for clarifying students' misunderstandings. Both in the high school and the university there is too much teaching by telling and not enough learning by learner activity guided by the teacher. Too much of the learner activity is left to contingent learning.

How far do we achieve our objectives with the brighter high school pupils and with university students? I have no hard evidence but my hunch is that we achieve much less not only than we wish but also than we believe we achieve (and our belief is never up to our wish). I have formed the hunch from reading thousands of examination answers. In many cases I have recognised that I have cast my bread upon the waters in class and that it has returned in the examinations a hundredfold shrivelled, stale and obviously indigestible. Further too many answers which do not seem to be echoing me are a mixture of a few uncritically accepted 'facts' not very adequately interpreted. On a different tack, I should like to report that I have noticed from the questions they ask that First Year students are fairly ignorant but highly inquisitive. By Third Year they seem to be still fairly ignorant but much less inquisitive. Finally, I have had a Research Assistant at work interviewing and administering questionnaires to First Year Arts students and their teachers in order to establish what both parties thought university studies were all about and what the students had to say when they had progressed to Third Year. It is too early to speak with any confidence about the findings of this study but it appears at this stage that they will leave a sour taste in the mouth.

Granted that my rather gloomy assessment has some basis, what has gone wrong? I can make only a few tentative diagnoses with very little in the way of evidence to support them.

First, there is in the senior high school and in the university too much instructional teaching and too much reliance on contingent learning. I feel certain that there are too many information-giving lectures in the university and suspect that there are too many information-giving lessons in the high

school. I believe that much of the time devoted to this sort of teaching should be devoted to what is sometimes called 'inquiry type' learning, that is learning which stresses problem-solving, seeking out information by the pupil or student and so on. Unfortunately 'inquiry type' learning is time consuming and as a result the universally overloaded syllabuses cannot be as readily covered as by instructional teaching. But how covered? An inch of thorough, comprehending learning is in my view better than an ell of superficial, uncomprehending learning. It may be necessary to reduce the syllabuses or to provide more options within them so as to make them more amenable to adequate treatment. What does it matter if someone who has studied in accordance with it hasn't an answer to some possible question in it, if he has learned how to go about finding the answer?

Second, teaching and learning is too much dominated by defective examining. I am not an opponent of examining. I do not see how we can do without it. I am merely making a plea that it be better, more intelligent and less constricting. I do not believe in examining by ambush but I believe that a good examination is not one which can be specifically studied for but is one which effectively assesses what has been studied. I believe teaching is a most difficult art and I believe that examining is an even more difficult art. This is easy to say but it is not easy to say how our examining should be improved. I suggest that this is a problem of high priority in educational investigation and experimentation.

Third, granted that teachers have objectives and ideals (though I consider that all too many of us have, in the main, a set of routines), I consider that we do not persuade our pupils and students to share them with us. I am amazed to learn that a Third Year Arts Language student could say 'I want to be a language teacher in the schools. I wanted more instruction in the language itself and less study of literary works which are too difficult for school pupils to study'. I understand him to be saying that he wanted only the competence he wished to transmit and that he saw no point in having a mastery beyond what his future pupils could achieve. I am amazed to learn that others have complained about being asked to learn what was not obviously relevant to some job which they hoped their degree would enable them to enter. I have no complaint about even an Arts student looking for some relevance in his studies to his future life, including his money earning life, but it surprises me that so many have only so narrow a view of the purpose of their stay in the university. I am interested in one mismatch of values between First Year Arts students and their teachers which my Research Assistant's inquiries seem to reveal. It concerns the importance of examinations. Many students say that in their view examinations are not really important but because the teachers are so concerned about them they, the students, have to stress examinations more than they wish. Many teachers say that examinations are not really of prime importance but because the students are so concerned about them they, the teachers, have to stress them. I have heard university teachers admit that they do not need so many examination papers as they use in order to rank their students but claim that the students would be unhappy if less extensively examined: 'if they go to the trouble to learn an area of the subject, they expect to be examined in it'.

Fourth, there seems to me to be a Catch 22 in respect of senior high school and university education. I am not sure what it is but I suspect it involves over-loaded syllabuses and a consequent over-emphasis on instructional teaching ('if I don't just tell them we won't cover the syllabus'), ineffective examining involving too great an attempt to cover the over-loaded syllabus and too traditional forms of examining and a number of other things done in too rigid and too routine ways. I suspect that students, teachers and examiners are all to blame, whether or not the teachers and the examiners be the same persons. Perhaps the core of the catch is too ready lip-service to the traditional and, I believe, justifiable objectives in the education of at least the scholastic elite and too little intelligent, explicit working towards the achievement of these objectives. I can see that the current anti-schooling movement is trying to break through the catch but it seems to me that it hopes to do so only by giving the whole game away.

WHAT EDUCATION MEANS TO ME—AN ABORIGINE'S PERSPECTIVE

T. WIDDERS

In order to arrive at an understanding of what education means to me, I have had to review and analyse two major past experiences.

They were:

being raised in an Aboriginal extended family system; and
being 'educated'—in secondary school—in the lifestyle of the white majority.

Far from being continuing experiences they produced a paradox, the understanding of which I did not come to until quite recently.

However, to clarify this, I will describe generally the life I experienced as an Aboriginal child, and later, briefly that of education in a middle-class setting.

One consideration I ask you to keep in mind, however, is the importance of a principle called continuum of awareness, and when this is disrupted an individual, or group, must build a new awareness or remain disoriented.

So, from a specific review of my childhood, I would say I developed a strong sense of being a whole person, and this as a result of high nurturance (i.e. consistently strong attention given to my evolving *person*), great autonomy in decision making and, subsequently, a growing sense of responsibility towards other people generally.

The overall effect of this on me was to nurture a growing interest in, and intellectual appreciation of the world around me.

As regards education in school, then, the net effect was I mastered the work set me, mainly because I was interested and curious and, generally, teachers didn't disagree with my personal conduct.

And a fundamental reason for my outlook was the absence of any group pressure on me in any way (even that of giving me the 'message' through their treatment of me) towards the idea that I must 'succeed' at school.

The reality I perceived then was generally stable, interesting and with very few frustrating personal or social barriers to prevent my coming to grips with it.

Please understand, however, that my personal situation was directly attributable to the strong and fair authority of the head of our group, my grandfather.

In effect, it was due to his sense of justice about personal and social relationships—their responsibilities and reciprocal obligations—that my early life pattern took its shape.

(Incidentally, not once did he relate to me, or anyone else of our group, any history or values regarding his past experience, as an initiated member, of the traditional, or changing traditional lifestyle of Aborigines.)

Summing up then, my perceptual stocktaking of the here and now—the reality—was rich, relatively unimpeded and subsequently led to strong conceptual development.

On reflection, I see that this could not have taken place without the guidance of three important factors. They were:

(i) Stable, warm personal relationships within my immediate group.

(ii) Absence of constraining—others—personal and social ambitions exercised over me (i.e. no syndrome of goals to be attained).

(iii) A relatively straightforward introduction to the here and now: the life we led and that of others around me.

Education as I viewed it at that time was but one in a series of related tasks—neither under nor overemphasised—that required doing.

However, this pattern of growth, this atmosphere, was greatly disturbed on the death of my grandfather.

And what occurred in my education after this, in terms of school results, interest in and understanding of the reality of the world around me, became subject to a high anxiety that permeated our group; firstly those around me, and then me.

In effect, while the group was not effectively dealing with our unsettled anxiety problem, I was unable to constructively deal with either school or anxiety in myself; that is, my personal relations.

By chance, it was at this stage that I started boarding in an all-male hostel, and attended secondary school from there.

I had become a de facto member of white, middle-class society.

And, at first, my energies were more concerned with coming to grips with the new environment, this phase being mainly experiential.

Within a short time, however, I was being urged by various members of my family to 'better myself through education'.

And simultaneously I came against the unwritten law of school: 'Pass the exams—finish school—increase your opportunities'.

Neither of these pressures could I understand at the time, which in turn led to being anxious about the future, and despondent about the present.

And, in time, the paradox clarified itself: my whole-person growth/general education as formerly offered by the group was no longer available, while opportunities for future 'development', offered by school, excluded whole development in the now, and this within the context of my group.

As a result, the impasse I experienced hastened my decision to leave school and, intermittently, home.

Now, while neither of these educational phases could be called 'true education' (but what is I'm not going to be definitive about), they certainly were educational experiences.

And they were significant experiences since they posed a crucial question: 'Why was this so?' 'Why do these experiences stand in contradiction?'

Several years passed, years taken up with experiencing a wide spectrum of Australian society, and years spent in trying to resolve a basic contradiction in my experience.

And, in time, I came to understand a very significant principle, which was that people's attitudes—i.e. the true complex of motives that shaped their feelings and ideas—largely determined their whole lives, whether they were conscious of it or not.

From this view I came to see that attitudes shaped attitudes. Or, that people, in the course of being themselves, greatly influenced those standing in close relation to them.

Now I make this point, for apart from class position, it explained to me—theoretically at least—why some sections of this society 'succeeded' at school and others didn't.

It followed, then, that with a majority collection of attitudes in school aimed at economic and social security—the goals as manifested in the lifestyle of Australian society—that schooling must serve as the process of continuing and ramifying such attitudes.

Was this education, or was it not?

One thing was certain, however, it was, and is, the reality; a reality that emphasised goals and not growth of the individual.

That education functions this way was understandable, I found, if viewed from the popular standpoint of it being the lead-up to entering the relative context of Australian society, for here we have capitalism dominating the economics of our livelihood; sectarianism serves as religion; political parties represent democracy; and wealth/status substitutes for human and social rights.

All this means, I found, is that education/success/growth—in our non-cultural context—is determined differently according to goals that different groups aspire to: goals are equated with growth.

Up to this point, then, I have been concerned with summing up my diagnosis of education in Australia, and tried, or rather implied, the factors that helped determine this view.

Now I wish to give my value judgement on today's education, and additionally, why I see it as necessary to begin transforming the rationale dominating current thinking on and practice of it.

Firstly, the sum effect of education is that it legitimates the parochial attitudes of most students, and this because education serves the hedonism of Australian society.

That is to say, students are subtly coerced to become parochial to attain the hedonistic goals that is the ultimate offering of our society, and schools are the deified institutions through which one must pass to attain the goals.

And this, in turn, must be at the expense of one's relations, within and outside the family; understanding of, and hence the feeling of being able to act potently on, one's situation; and, most importantly, the desire to want to understand and act.

Ultimately, such a process destroys the emotional and intellectual flexibility necessary to set in action a process of reflection on the now reality, act effectively to recreate the existing social order, and thus build a new unity of practice and theory.

Therefore, to reach a stage where education is no longer dominated by a goal/success system, but rather is concerned with a growth/awareness *process*, a change must occur within the social structure.

And this change need not specifically be economic, social, political or cultural, but rather a combination of all that leads to a flexibility of attitudes within the person, within his social and personal relationships and his awareness of social phenomena.

Therefore, at base, I see this change needing to begin at the level of people's interpersonal experiences.

That is, through the sharing of such experiences must come a deeper understanding of the whole self, and acceptance of this state can only lead to development of flexible attitudes and greater awareness of other people.

Most importantly, this sharing of experiences must lead to a broadening and continuing of awareness of social phenomena.

By this I mean an awareness of the forces that create or influence social change; the effect of social change on the structure and people, their attitudes, emotional state, and ability to relate to the changes that occur in themselves, and the changes that occur in others.

'THE EDUCATIONAL PROCESS'—A LAYMAN'S POINT OF VIEW

R. B. PROWSE (N.S.W.)

The invitation from the College was to a Layman who had some understanding of the educational process, someone who could tell a gathering of professional educators what kind of experience he hopes that children and students will enjoy in the formal institutions. He was also to say what kinds of effects he hoped the experience will have on the young people as they develop through primary, secondary and tertiary education.

The word 'enjoy' is one which causes some misgivings. If our education systems and processes are to be devised and implemented so that young people's experiences are to be restricted to those of enjoyment then the ultimate end products must, in the main, be greatly inadequate to the challenges of later life. With relatively few exceptions, people are as lazy as they dare to be. This is particularly relevant to most people in their formative years. When their experiences are narrow that maturity, which is so necessary for co-existence with people who hold different ideas, is not developed. The education process should, therefore, involve students in some substantial activities from which they do not get instant enjoyment; activities which might indeed rank very low on the scale of their own personal priorities and preferences at any given time. As an example, I resisted my mother's plea that I should learn the piano rather than aimlessly kicking a football. I have since regretted that she was not more insistent that I acquire that skill which would have been to my ultimate enjoyment in later life.

Almost everybody needs motivation from outside himself so that he can attain his maximum potential. This seems to be true even in the context of one's favourite activities. Even a champion athlete, a runner, needs the challenges of competition. Unless he is conscious of the inexorable testing he will have to face in a big race; unless he is aware of the relentlessness of the timing device against which he runs, he will never reach the performance peak which, otherwise, he could have attained. All business men would also lapse into relative slothfulness but for the external pressures upon them—many of which they dislike. Challenges from competitors; drives for the personal satisfactions that are seen as corollaries to status and higher income; competition from others in search of the top job; pleasing the boss or the shareholders; the attitudes of the media; the market place; public opinion; consumer demand; parliamentary requirements and other factors force people into disciplined activities to which they probably would not have subjected themselves if left entirely to their own devices. Similarly the student, irrespective of age, cannot realistically expect to be free or to be freed from all the compulsions that society and experience suggest that he should face.

The word 'free' is used in the sense of their having virtually no obligations other than in the context of school, university or advanced education college. Judgments based on emotion and ignorance are more likely to

be made by these young people in their early years, than in their later years. It used to be said, of course, that you can't put an old head on young shoulders, and in a progressive changing world it probably is valid to say thank goodness for that—but on the other hand how much long range damage, how many sins of omission to individual progress and satisfaction, and often of enjoyment and national attainment possibilities are done by our excusing the young from obligatory disciplines just because they find them, in those early days, uncomfortable or not enjoyable. We make, I believe, a grave mistake if we do not insist in impinging some sort of authority on the young even though they might not happen to like it. To permit them to avoid the compulsions and to allow them mentally to invade only those areas which at that stage of their development they favour and then to launch them on to a world where society is ruthlessly insistent and where they cannot avoid, no matter how hard they try, disciplinary actions, is in my opinion inadequate to the point of being cruel. Surely children are entitled to be trained to live with the disciplines from which they cannot in life escape, and surely that training and discipline is best backed by deep interest and affection. The alternative is to project an untrained person who will experience discipline without interest, and without love or affection. For a child to pass into such a situation unprepared, that would evidently be the case, is for that child to be put in jeopardy, to be in danger of falling into escapism, to develop a warped personality and at times to experience those social kinds of drug abuse, alcoholism, road-hogism, vandalism and other elements of anti-social behaviour.

In some cases it even spills over into a don't care attitude to life, either their own or other people's. In terms of the brief therefore, I hope that the trend that I suspect is current in education these days, away from discipline, will be reversed to some extent or at least not allowed to drift further. In saying that, I am very conscious of the possibility of that view triggering off many critical observations and opinions to the effect that I am leaving myself quite vulnerable to charges of being out of date, not understanding, and that I am in danger of placing at risk the freedom of the human spirit in encouraging and nurturing creativity in the young. But be that as it may, we must become more and more aware of the risks of sponsoring laziness amongst the young in the guise of encouraging creativity, of allowing them to take the easy way out, because they are as lazy as they dare to be. Let us be sure that in a drive for creativity in the young we don't create a mass of worthless trivia and deny the child the solid core of knowledge, without which the capacity for sound judgments and creativity cannot mature. Let us beware too the increasing trend towards absolving teachers from inspectorial supervision, definite basic curricula, and the discipline of testing. As Dr. Just recently wrote—'Our children are at the mercy of an individual who may or may not be worthy of his charge'.

I should hope also that we would constantly evaluate the basic structures of our educational institutions. It seems to me that if there ever were valid arguments for the complete separation of primary and secondary schooling, such arguments today need re-examination. In preparation for life which to me is what education is all about, it appears that learning should be a continuous process; in practice, however, we don't appear to recognise this.

We have inserted a man-made hiatus between so-called primary and so-called secondary levels, and the gap is so great apparently, that in some places a whole extra year has had to be devoted to enable the students to make smooth transitions from the one to the other. If subject specialist teaching, universally used I think in secondary schools, is appropriate at age 13 or 14 at a high school, why, I must ask, is it not also appropriate in a primary school when that same child is aged 10, 11 or 12? Why do we have this difference? Why, too, are languages not taught in primary schools as a general rule? Is there not a better way to administer schools than by taking the best and most experienced teachers out of the teaching stream and making of them permanent non-teaching, virtually untrained administrators called principals. Are we so well staffed with teachers of this high quality that we can afford to promote them out of teaching in this way? For how long, too, are we going to be content to use state and perhaps other school facilities involving vast capital outlays, for only some eight hours per day, five days a week, less 10 school weeks holidays, and some public holidays per year? Disregarding those schools in which adult education classes are held and in which occasional meetings such as the parents and citizens associations take place, the fact remains that vast capital outlays of public money are involved in schools, and they are being used for an average of considerably less than 20 per cent of maximum time. Something like 1600 hours out of a total of the 8760 hours that constitute the normal year, the rest is virtually capital waste time which would appeal but little to an investor who had put similar types of capital expenditure into productive machinery without blood in its veins but oil in its works instead. Is it beyond our capacity to evolve a workable system of shift work in our schools, as I understand is done in certain other places? There seems to be, too, a trend away from evening classes in universities and similar institutions. Theories as to insufficient use of capital intensive facilities involving vast amounts of money seem relevant and urgently in need of answering. Have we yet established clear enough lines between social welfare departments responsibilities and the responsibilities of officers of educational departments and other educational institutions?

Whose are the problems before and after school hours of the 'latch-key children', who in some areas constitute about one quarter of the total local school population? It seems that the answer to that question is still up in the air.

Is it unrealistic to hope that before much longer it will be feasible to devise a system by which the community too will be able to use school grounds and at least some school buildings, say at the weekend? Can we not make arrangements so that students will be able to use their own school libraries and consult with the expert librarians of which Australia is in desperate need, at the school after school hours and at week ends? I should hope that in Australia the scope of the process of education of tomorrow will in many ways be rather different from those of today. Far too high a proportion of today's children leave school grossly inadequately equipped for the business of living in a democratic environment with other people. Far too many university graduates are in the same situation. Not very long ago I attended a live-in seminar at A.N.U. arranged under the banner

'Graduates for what?' This was well attended by what seemed to me to be a good cross section of university and C.A.E. students and graduates, and staff, government department representatives and a few business men. Overwhelmingly, it was considered that in a significant number of cases, particularly in the non-physical science categories, graduates were urging that these processes had not equipped them for the unsheltered world beyond the cloisters. It would be too much to say that that opinion was unanimous but it was predominantly held. The grub that was the undergraduate found itself at a loss when it came out of its protective cocoon and became a butterfly away from the campus spreading its wings in a somewhat predatory world. And trauma and deep disillusionment, it was believed, often followed as the comfort of the academic protection disappeared. Part of the solution was seen to be in building better bridges between the community generally and universities and Colleges in particular; arranging for pre-graduation personal confrontation by bringing business men into academic life and by students before graduation going into the world beyond the campus, to ease the transition. I hope that it would not be beyond possibility for school leavers about to proceed to universities and C.A.E.'s, to enter the stream of the workaday community for, at least some months before they start their tertiary courses. If this meant commencing tertiary education midway through the calendar year, I am confident that there is sufficient human ingenuity available to adapt to that. If it meant, and it might not, also ending the tertiary courses mid-year, one very obvious advantage would be that the normal beginning of the year statistical peaks of job applicants would be flattened. Normally employment statistics become greatly affected by the rush of job seekers as high school leavers at two levels and graduates of universities and C.A.E.'s all come on to the market virtually simultaneously in January and February, and for businesses and government departments and other employment this means that normally employers have little option but to over-recruit early in the calendar year so as to take anticipatory account of the normal erosion of employees and/or expansion requirements that will inevitably be faced in the next 12 months. This is (a) uneconomic for them and (b) it is an unsatisfactory introduction to the business of earning a living for the new employee, who for some time must see himself virtually in the role of a supernumerary.

I suppose that for children exposed to the blatancy of the news media, it is reasonable for schools to encourage and teachers to lead discussion on matters such as television and abortion, religion and sex and so on. But the question has to be posed are we justified in doing that if it means doing less of making what I call a 'core' knowledge available. Far too many school leavers, I believe, enter the work force with an unutterably bad understanding of and capacity to use their own language. It is extremely rare in business to find a new recruit at mid-high school level who can put words together in a way satisfactory to the recipient of a letter or memorandum. Far too few enter the work force with little if any desire to continue the acquisition of knowledge—they want to leave school to get away from it. Far too many enter society and let's keep in mind that henceforth school children will be full adults with full voting and civil rights—far too many enter the work force with little obvious sense of civic responsibilities and

with a small appreciation of what a democracy is all about. Desperately short on concepts, thinking in many cases only in catch-phrases and headlines, and devoid of the sociological sheet anchors to perform the moral holding operation that was once the function of religion. 'Cynical, negative, and nothing' are the three words that were used to me the other day by a university student, a leader of her fellows—anything but deep-thinking, knowledgeable, constructive or articulate. Should anyone believe that that is excessively exaggerated, I invite him or her to do his own survey, to listen to a press or radio interviewer ad lib on ordinary citizens in the street and on screen.

To illustrate further, it is necessary to survey the world scene today with its impact on Australia. Britain's entry into the European Economic Community or Common Market and the vast economic, sociological and political consequences that are and will be flowing from that is obviously one of the most significant events with which we will ever be faced. One might say that the year 1973 could be regarded, with some reason, as the Australian nation's first year of real independence. After so many years during which we have had special arrangements with Britain of a protective nature and assured markets for our basic exports, we face a 'closed shop', very heavily closed towards Australia. Further blocs exist—e.g. the 'Russian' bloc in Eastern Europe, another closed shop. Similarly, we have U.S.A. and Canada, Central America and another rather loose but potentially firm bloc in South America. Continental Africa has the Organisation for African Unity and around the Mediterranean there is an Arab bloc. Problems also arise in our relations with China and Japan and we will be left with restricted markets and political relations. What policies have individual educated Australians conceived about these issues in order to live out their true role in a democracy as vote registering, opinion-creating citizens? It is suggested that you do your own checking and you will find colossal ignorance and incredible disinterest in these issues.

Inevitably, we are becoming inextricably interwoven with Asian affairs. Are we prepared to remain solo in the face of world trends towards increasing nationalism and economic self-sufficiency and closed trading blocs? What do the young people who are leaving our educational institutions and who will inherit this land of ours think we should do? Ask them and be horrified! Should we go for a protective oriental common market made up of uncommitted countries of the Pacific and Indian Ocean regions, keeping in mind that the essentials of the Common Market include the completely free flow of people with full residency and citizen rights as well as the free flow of capital and ideas? Ask your youth what industrial and political reconstructing should be considered in the light of these changes—and weep. Yet these things are of the utmost critical importance to them and their future.

How flexible have been our educational institutions in the light of these vast dynamic changes? There are but five state schools in N.S.W. at which it is possible to learn but one language of Russian, Chinese or Japanese. The answer to the problems that have been expounded, or at least the comment that can be made is that our educational systems have been

unbelievably inflexible—how difficult it is, to the point of impossibility for the great bulk of our young people to determine an opinion and to get knowledge of the habits, the traditions, the history, the customs, the economics and the language of those other countries of which we are now a member part. It is hoped that in the very near future the educational institutions will realise the critical and urgent importance of our people knowing more about those people with whom our future is inextricably tied, so that we can deal with them in their own languages and with full cognisance and respect for the habits and customs of such people. This, at the moment, is not possible except to a very minor degree.

What guidance, too, are we giving to the great majority of our youth? What are they getting in relation to meeting the needs of change in a changing world? They believe our generation to be a lot of "squares" and if they do believe this it is our fault. Whatever we are doing, it is inadequate at the present time. Where, apart from the subjects of Commerce, do students of high school and university learn of the implications of change. Here we are in history's first great age of discontinuity, this first great age where things of the future are going to be different from those in the past. In this age of the Laser Beam, computerisation and interstellar communication, this age of the creation of new dynamics and their industries; this age of the creation of non-natural, man-made fibres and synthetic high protein food; are we really in our education system equipping the young to handle this?

Not only are there immense changes in the physical sense, but the changes in the sociological sense are at least as dramatic and as urgent for our attention. It is hoped that it will not be long before we restore the old-fashioned subject of 'civics' to our school and university curricula, at all levels and in virtually all faculties. I cannot see how any democracy can expect to raise the right kind of citizens for the future, with an appreciation of all that is involved in people living together, whether it be in trade union to management, nation to nation, parent to child, teacher to student, wherever it is that there are interpersonal or international relationships without a very much fuller training than is in the curricula for the present. I do not believe we are even beginning to train our children to become social analysts. There is an enormous scope and an urgent need for us to equip these young people to evaluate statements about the actions of anti-social business men whose gods are profits and also about the demagogue on the other side who does nothing to raise productivity or in practising democratic principles.

Educative processes of the future should be such as would teach our young people as much as possible of the difficult art of communication, of how people can live together in harmony and dignity, with human freedom and increasing material standards. I hope, therefore, that nothing less than the re-introduction of civics at all levels should be done as soon as possible. We are not entitled to complain or be cynical about legislators when, after primary school is finished, we indicate pretty effectively to our secondary and tertiary students that specialisation in the narrowing disciplines is much more important than learning the difficult art of living with people and how their

society must work, if it is to work at all. Is it any wonder that in the face of changes in this order so many of our young people are frustrated and exhibit this in various ways. There are so many other changes: newer and fewer forms of morality, the increasing cynicism towards religion, the general incidence of crime, the awareness of pollution, drugs, migration problems—demographic variations from the past that are quite dramatic in their differences. In what way is the great majority of our senior students encouraged to think of these and of such social phenomena as the increasing efficiency and aggression of organised trade unionism? In what context do they do their thinking about the role of men and women in industry, industry that is torn between the most efficient means of satisfying consumer demand at the lowest prices, by using the assembly line technique and the lack of humanitarianism that condemns the operator on the assembly line to lose his personality and become almost a robot? Are we teaching the young people about these things, or are they only thinking emotionally in 'headlines' about them? We are leaving these questions in default, largely, while we limit our students' electives and watch them opt into 'Buckley's Choice'.

Our history has been one of men and women fighting to establish legal conditions in which the basic freedoms of speech, association, worship and enterprise are protected. I would like to see in our educating institutions a more determined championing of the rule of law. I may be guilty of over-generalisation but I believe that if a law has been militarily, arbitrarily or dictatorially introduced into a democratic society there can be some justification for its defiance or evasion. If in a properly constituted democratic parliament a law has been brought down by the due processes of parliament there, surely, seems no valid case for its being ignored or defied simply because some group or groups do not like it. If we are to ensure in the future that man's freedoms, ingenuity, spiritual and material gain can flourish there must be an improved acceptance of this rule of law—the alternative is totalitarianism, anarchy and, eventually, dictatorship of the clique. It must be made plain to young people that while every man or woman has the right to fight for his beliefs, he has an obligation in society to be legal in his actions.

In this paper, I have been a little critical—I suppose—that was my brief. I did not interpret the brief as a pat on the back for society, I think we could spend so much time telling and recounting what is right, I believe that what we have in Australia today is the end result of probably the most dramatic improvement in conditions of any nation since history has been written. Despite all of the criticisms that can be levelled about denials of freedom, censorship and so forth, this country has attained down the years, standards of living the like of which the world in my opinion has not before seen. I believe that we have not basically paid the price that the dictator extorts from his people, in return for the bread and services and material things, we have not expected, we have not extorted from our people their basic freedoms of speech, worship, association and last but not least, of enterprise. But I believe that there is an inadequate appreciation of what has to be protected at this stage. I believe that the negative is looming much too large in our educational institutions, there is not enough pride in

what has been done to date, and not enough determination to protect what has already been got. I do believe that that is one of the roles which the education processors of the future must undertake increasingly. Let us always be critical, let us always be consistent in trying to improve the lot of man, but don't let us knock down before we know what we want to build.

A NEW APPROACH TO TEACHING: THE OPEN SPACE SCHOOL

R. K. BROWNE[1] AND C. J. H. CRAIN[2]

In this paper, the writers briefly criticize schools organized along conventional lines then present a paradigm which embraces the salient characteristics of, in their view, a *model* open space school. Next an account and partial evaluation of the first year of operation of a new open space school in Queensland which commenced operations during January, 1972, is presented. Finally a select bibliography—drawing on both Australian and overseas sources—is provided.

Criticisms of the manner in which schools have been organized and operated are legion. Criticism is intensifying and comes from an increasingly wide cross-section of the community. This criticism includes Bassett's comment on Australian primary schools that:[3]

> Methods of teaching, school organization and assessment, and reporting of pupils' progress exhibit . . . ambiguity. Taking primary school practice as a whole . . . it can be inferred also that a more thoroughgoing use of organization and methods that allow greater opportunity for continuous scholastic progress along individual lines will bring about changes . . .

While Bassett is considering academic aspects of schooling, he appears to suggest that there are preordained outcomes of patterns of classroom organization and methods.

A criticism of conventionally organized schools was made recently by the American writer Silberman who argued that Americans:[4]

> '. . . will not be able to create and maintain a humane society unless we create and maintain classrooms that are humane'.

Bassett has criticized conventional schools on the grounds that more stress should be placed on individualization; Silberman states that schools must develop a more humane climate to influence the development of a humane society.

Some criticisms of conventional schools, particularly in the past, have been that they often display rigidity of structure, the teachers in these schools are not always fully appreciative of the educational and emotional

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[3]p. 31 in Bassett, G. W., *Each One is Different*. Australian Council for Educational Research, Melbourne, 1963.

[4]p. 524 in Silberman, C. E., *Crisis in the Classroom*. Random House, New York. Vintage Book edition, 1971.

importance of individual differences, they tend to be teacher rather than student-centred, and that they tend to train students for docility. The educational outcomes of these schools are often dependent on social class, ethnicity and race, tend to be dull, both in respect to the physical and psychological milieu, and with their emphasis on compulsion, fixed attendance hours, collective experiences and constant evaluation often produce uniform patterns of behaviour on the part of their students. In addition, teachers in these schools are less likely to stress movement, games, co-operative work and other activities for their students but stress rather passive involvement, mainly in the form of listening. The writers share many of these criticisms and view open space education as a desirable alternative form of schooling.

Characteristics of a 'Model' Open Space School

By use of the C.I.P.P. systems model,[5] the salient characteristics of the open space school are outlined and presented in summary diagrammatic form in Table 1 below.

Panel 1.1—Community Context

The community forces acting to produce a qualitative school (in the educational sense) may be looked on as a series of concentric influences.[6] The influences acting on school quality are interrelated and set within the community context—one index of which is the educational climate determined by the ethnic patterns, the wealth of the area, the character of the income pattern and other socio-economic characteristics. Communities are diverse and due to the factors mentioned above, differ one from another to varying degrees and these differences are reflected in the character and operation of schools, e.g. in a study, Brookover found that schools reflect the values of the dominant groups in their communities.[7]

While the community context has to be taken as a given, and while it can be argued that open space schools can operate successfully in virtually any community context, the specification and suggestions for the model situation started in other cells of this paradigm should be followed. Difficulties are posed, it is suggested, if the student population is markedly atypical in terms of intellectual ability or emotional characteristics.

Panel 1.2—Physical Features of School

The building and other physical facilities used by the school should be developed after the development and acceptance of the philosophy and purpose for the school. The main teaching areas should be designed to take up to 60 students, and provide ample facilities for large group, small group and individualized instruction. The furniture and capital equipment should

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[5]E. G. Guba and Stufflebeam, D. L., *Evaluation—The Process of Stimulating, Aiding and Abetting Insightful Action*. Indiana University, Bloomington, 1970.

[6]Mort, P. R., and Furno, O. S., *Theory and Synthesis of a Sequential Simplex*. Columbia University, New York, 1960.

[7]Forster, T. H., Katz, W. K., and Otto, H. J., *Value Orientation in Four Elementary Schools*. University of Texas, Austin, 1966.

Table 1—C.I.P.P. Systems of a Model Open Space School

Panel 1—Context	Panel 2—Input	Panel 3—Process	Panel 4—Product
1.1 Community Context —attitude of community to education. —social class composition. —other socio-economic characteristics. —ethnic composition. *1.2 Physical Features of School* —design of building. —development of other facilities to implement the teaching programme. —location of principal's office. *1.3 System-wide Policies* —policies. —curriculum. —provision of equipment. —problem of lack of autonomy to school especially in regard to staff selection and curriculum design.	*2.1 Students* —students at any level from pre-school through to post-primary. —smaller schools not to be over-loaded with educationally or emotionally handicapped pupils. *2.2 Staff* —importance of personal qualities of warmth, creativity and the ability to work as a member of a team and display initiative in learning situations. —importance of selection of staff (and pre-service training). —aides. *2.3 Curriculum (inc. Materiel)* —curriculum conceived as the full set of learning experiences provided by the school. —based upon philosophical rationale and stated objectives. —curriculum considerations include methodology and materials for implementing and operationalizing the methods.	*3.1 Socio-psychological dynamics of Learning Environments* —indices of an effective learning environment are: pupils willingness to choose challenging tasks. flexible orientation of pupils. cognitive style of pupils. *3.2 Instructional Strategies* —use of behavioural objectives. —integration of subjects. —team teaching. —emphasis on psychological and emotional aspects. —planning of instructional strategies. *3.3 Scheduling and Staff Utilization Patterns* —should be geared to an individualized approach and teacher satisfaction. —stress on school developing own staffing pattern.	*4.1 Characteristics of Graduating Students* —self disciplined. —possessing a healthy self-concept. —developing social concern. —knowing how to learn, attack new problems and acquire new knowledge. —able to use rational processes. *4.2 Teacher Attitudes* —behavioural (attitudinal) change of teachers in regard to: assumptions regarding children's learning. interpersonal relationship with pupils and other teachers. *4.3 Innovative Professional Leadership* —the advent of an open-space school will result in the adoption of forms of open space organization in a number of surrounding schools.

be movable to allow teachers flexibility in implementing the educational programme.

In developing an open space school, areas should be designated for learning centres, special diagnostic and remedial sections and multi-media centres.

Two further considerations under Panel 1.2 are firstly, that the principal's room should be located centrally to facilitate the discharge of his role as an instructional leader and secondly, the use of out-of-door areas (e.g. raised and sunken concrete areas) should be capable of being used to advantage.

Panel 1.3—System Wide Policies

Typically, schools exist within larger education systems such as a State Department of Education which imposes regulations and/or other policies. Ideally the principal and school staff should be vested with responsibilities for staff recruitment and selection and to as great a degree as possible control over academic policies.

Panel 2.1—Students

Basic to the philosophical rationale supporting open space education, is the notion that children are individual—they learn in different ways, at different times. Also children have emotional and social needs which have to be catered for in their formal education, and children can learn much with and from each other.

As suggested in an earlier statement (Panel 1.1—Community Context), the present writers view open space education as suitable for virtually any community context.

It seems important that smaller schools (other than special schools) should not be overloaded with either educationally or emotionally handicapped children.

It is important to stress that the open space approach is desirable at all levels of formal education—pre-school to and including post-secondary.

Panel 2.2—Staff

It is not sufficient to rely solely on basic teacher preparation for the selection of teaching staff for open-space schools. The learning environment in open space schools requires staff who are prepared to, and enjoy, working as members of a professional team which has a large degree of autonomy in decisions regarding curriculum.

Qualities deemed essential of teachers in open space schools include:

—warmth
—creativity
—ability to work as a member of a team
—ability to display initiative in learning situations.

Blackman argues:[8]

'. . . that along with the children, adults in a school are the most

[8]p. 3 in Blackman, C. A., *The Kinds of Educational Programs We Need For the Middle Years.* Paper presented to the 1971 Conference of A.S.C.D. (U.S.).

important component of that learning environment. Unless they are exciting, growing, changing, creating kind of people themselves, they are likely to take the edge off youngsters who are seeking to extend these qualities. The important thing in my view is that EVERY child must come to perceive that he has ready access to an adult he TRUSTS—in this instance as an aid to help him process his learning experiences'.

Two other considerations regarding staff input include the necessity for appropriate training prior to the assumption of full-time teaching responsibilities in an open space school, and, as W. D. Neal has suggested:[9]

> 'Much of teaching and learning activities (should) be handled through co-operative teams of functional specialists. The team will include administrators, professionals, paraprofessionals, technical and other support staff and even pupils'.

Panel 2.3—Curriculum (including Materiel)

A vital input is the curriculum, that is the 'full set of learning experiences provided by the school—facts, skills—relationships encountered—everything indeed that has an effect on the knowledge, attitudes and the values of the pupil'.[10]

Included in the curriculum is a statement of the underlying philosophies and objectives of the programme. While there are various philosophical positions which may be held (which consequently are articulated in different sets of objectives) the writers have accepted on an *a priori* basis the following:

We believe that the essential objectives of education must be premised on the recognition that education is a process of changing behaviour and that a changing society requires the capacity for self teaching and self adaption.

Panel 3.1—Socio-Psychological Dynamics of Learning Environments

Bloom emphasizes that whether a pupil is taught in a large group or a small group, he learns in an individual way peculiar to his own learning habits.

As a consequence of this

> 'Individual students may need very different types and qualities of instruction to achieve mastery. That is the same content and objectives of instruction may be learned by different students as a result of very different types of instruction'.[11]

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[9]p. 5 of Neal, W. D., Changing Teachers Roles—And Some Implications. In *Newsletter*, The Queensland Chapter of the Australian College of Education, Brisbane, Vol. 11, No. 3 (1972).

[10]p. 5 in Cunningham, K. S., and Ross, D. J., *The Australian School at Work*. Australian Council of Educational Research, Melbourne (1967).

[11]Bloom as quoted in p. 10 in Campbell, W. J., Some Indices of an Effective School in *Criteria of School Effectiveness*. Proceedings of a Conference Organized by the Queensland Chapter of the Australian College of Education, Brisbane, 1970.

In describing programmes to suit individualized instruction, Campbell suggests that one take account of

(i) 'pupil's willingness to choose challenging tasks'[12]

(ii) 'flexible orientation in the pupil's approach to life'[13]

(iii) 'cognitive style or educational set of own pupils, i.e. a continuum defined at the poles by predisposition to learn factual content on the one hand and conceptual content on the other'[14]

The emphasis here rests on the conceptually set learner as this person seems best able to promote his own learning outside the school situation. (Siegel and Siegel, 1965)

One would also have to take account of freedom—

—to move

—to select subjects

—to choose method

—to choose group—or to remain outside the group

—to choose adviser

—to show social concern for his fellows.

If these principles are adherred to and an overriding open organizational climate exists, then a programme which caters for individual needs is established.

Panel 3.2—Instructional Strategies

Desirable instructional strategies include the use of behavioural objectives, more integration of subjects, the incorporation of team or co-operative teaching, an emphasis on the psychological and emotional aspects of teaching, and stress on individualized programmes.

Panel 3.3—Scheduling and Staff Utilization Patterns

Scheduling and the staff utilization patterns in an open space school should be, in the last resort, geared to the development of an individualized approach for the students; they should provide also an enjoyable environment for teachers to work in and which reduce dissonance in regard to teachers' expectations.

It is stressed that the teaching staff in open space schools should be encouraged to take the initiative in developing their own staffing patterns, with:

> '. . . leadership being developed on functional or task oriented lines, e.g. leadership of teams or leadership in curriculum development, evaluation, materials preparation, learning systems design'.[15]

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[12]*Ibid.*, p. 10.
[13]*Ibid.*, p. 12.
[14]*Ibid.*, p. 13.
[15]Neal, W. D., *op. cit.*, pp. 12-13.

Panel 4.1—Characteristics of Graduating Students

One hopes that the child exposed to this type of schooling will subsequently display the following characteristics:

—self discipline,
—realistic self concept,
—social concern,
—knowing how to learn,
—knowing how to attack new problems and how to acquire new knowledge,
—competence in the basic skills and the ability to use rational processes,
—intellectual and vocational competence, and
—creativity.

Panel 4.2—Teacher Attitudes

Another product one would hope from this type of schooling would be a change in each teacher's assumptions about children's learning and their interpersonal relationships—and also about the relationships between teachers.

Panel 4.3—Professional Innovative Leadership

The well organized and successfully operated open space school should prove to be of considerable interest to professional educators. According to studies of the dissemination of educational innovations, the advent of the first open space school in a particular geographical region will—at first slowly but later at an increasing pace—result in the adoption of modified forms and versions of open space rooms/schools in a number of surrounding established schools—both primary and secondary.

If the subordinate authority (see Panel 1.3) in a centralized authority agrees to develop all new schools on this pattern and, by doing this, facilitates the organizational arrangements necessary for their implementation, the rate of this innovation will quicken.

The Gabbinbar Experience

The writers have previously presented a rather stylized, idealized description of a 'model' open space school, or at least some guidelines and suggestions for developing an open space school. These views have been conditioned by the writers' experience with such a school which commenced operating in January, 1972, at Toowoomba, Queensland. Below is an account of the school—including some of the problems and frustrations of operating it—during its first 18 months. The following account of the Gabbinbar Experience is developed on the C.I.P.P. systems model also.

Panel 1.1—Community Context

The Gabbinbar State School, operated under the Queensland Department of Education, was built by the Queensland Department of Works for the commencement of the 1972 School Year. The plan was the general plan for new primary schools which have been built in Queensland over the past two years.

Queensland does not have geographical zoning for school attendance, and so Gabbinbar draws its pupils from all the Toowoomba environs—Toowoomba being a city of 63,000 located in a rural area on the eastern edge of the Darling Downs.

Prior to and during its construction a series of public meetings was held and at these the public had the opportunity to hear and discuss the underlying philosophy of 'catering for individual differences and a freer organizational climate' presented in talks by two experienced principals of 'progressive primary schools'.

The parents who support the school in 1973 could be grouped as:

(i) parents dissatisfied with other schools,

(ii) parents whose children are having learning difficulties, and

(iii) parents whose educational philosophy finds an affinity with that of the school.

There are more Gabbinbar parents who belong to the professionally employed middle class than in the average State School. This has resulted in a high degree of parental involvement in the school. This involvement as teachers' aides and as consultors with regard to syllabus variations — particularly with regard to the School Camp—help parents and other members of the community to become heavily involved.

Panel 1.2—Physical Features of the School

The school, which comprises five buildings (1750 square metres), is set on five hectares of land on the attractive rural outskirts of Toowoomba.

Panel 1.3—System-wide Policies

As stated earlier, Gabbinbar is operated under the Queensland Department of Education and therefore operates under the *Education Act of Queensland* and the *Handbook of Administrative Procedures*—an official document published under the authority of the Hon. the Minister for Education, Department of Education, Queensland.

Presented in diagrammatic form in Table 2 below are the respective responsibilities of the Department of Education, School Principal and the Parents' and Citizens' Association.

Panel 2.1—Students

Procrustes (the Stretcher) of Greek mythology, wined and dined his visitors and placed them in his visitor's bed. If they were too long he cut off their legs until they fitted; if too short he stretched them until they fitted. Finally they all were of equal length and equally dead. Translating the point of this myth to the educational world, teachers at Gabbinbar base their approach to students on:

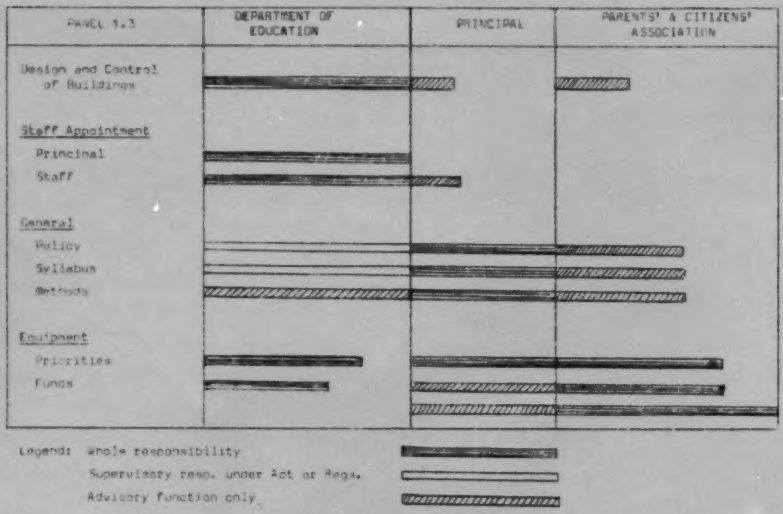
(a) providing for individual differences,

(b) stressing the development of self discipline,

(c) stressing the development of self respect, and

(d) stressing the development of an attitude of social concern.

TABLE 2. Diagram showing respective responsibilities of the Department of Education, Principal, and Parents' and Citizens' Association.



The enrolment on the first day of operation was 200 students. Some 20 per cent of the children admitted had experienced psychological problems or subsequent testing showed that such problems existed. The parents of the children admitted to Grade 1 were asked to complete the McLeod's School Commencement Check List—children in Grades 2 to 5 were given the relevant levels of the Slingerland Test for Diagnosis of Children with Specific Learning Difficulties. The McLeod List, together with a test—the Enticknap Picture Vocabulary Test (which was used as a basal readiness test as well as a quick estimate of ability of the pre-school child) proved most helpful in helping identify Grade 1 children with educational problems while the Slingerland Test was helpful in identifying children with learning problems at more advanced levels. Care was taken that the test results of children under 7 showing difficulties were not attributed to their maturational level. The St. Lucia Reading Test—together with the Neale Test for Reading Ability were also used to establish a general reading level for children in Grades 5 to 7.

Initial attempts were also made at evaluating each student in relation to a set of behavioural objectives in Mathematics—however, this proved quite time consuming and in some cases, caused tension on the part of some students. Instead, Behavioural Objectives were set out on a Departmental basis

—Infant

—Junior, and

—Senior

and while emphasis was placed on successfully completing a timed number of facts on the test, children could select from any of the other options.

When the student had completed the work, or had known the work from previous experience, he was evaluated by the teacher on the basis of a conference.

Panel 2.2—Staff

In the open space situation teachers' functions are in certain respects different from those of teachers in the conventional classroom because they work as members of professional teams exercising some freedom in curriculum planning and classroom organization. Co-operative planning is necessary and such co-operation is in part based on personal commitment by each teacher to know and to understand other teachers, and developing an attitude of trust within the group which allows for the freedom that is essential for an open-space classroom. Obviously, careful selection should be made of teachers for open space schools.

Considerations concerning each student included:

—*speed of learning*

—*quality of instruction*

—*ability to understand*

—*perseverance*—'the amount of time a student is willing to spend on a task' and his levels of distractability and the relationship between this and the method of instruction used.

Evaluation changes its emphasis from the evaluation of the child and the outcomes of his learning to whether or not the method of instruction has been successful.

The teacher's duties lie in three major areas as outlined by Dell in 'Individual Instruction' (SRA)

—Conference Evaluation Situation—looking at, and assessing student progress since previous meetings with the student and helping the student to plan appropriate further goals.

—Tutoring, during which the teacher diagnoses students' problems, determines effective steps to solve the problems, and asks students to demonstrate the proficiency in using appropriate skills in new situations.

—Socialization.

Panel 2.3—Curriculum (including Materiel)

The principal, by the time the school was opened had developed a philosophy of curriculum reflected in panel 2.3 above. Before the school opened, he held discussions with the other staff who moved to a broadly similar philosophy. Essentially the basic curriculum included:

(a) a statement of Behavioural Objectives for each major curricular area,

(b) flexibility in methods of learning and grouping, and a

(c) stress on creativity.

Some examples of the material used are listed below:

Mathematics

Countdown—Stages 1-3, 4-6 (Oliver & Boyd).

Triad 1—Jacaranda Press.
Mathematics for Schools, Levels I, II, III—Fletcher (Addison Wesley).
SRA Fact Kit.
SRA—Computapes—Modules 3, 4 and 6.

Language

Breakthrough to Literacy—Oliver & Boyd.
Peabody Language Develop Kits 1 and 2.
Learning to Think (Red, Blue, Green, Gold)—SRA.
P.M. Readers.
SRA Reading Scheme—Addison Wesley.
Take Part Books—Penguin Education.
'The Sea'—Graigie College of Education, Ayr (Scotland) (Dominie).
'The Sea'—Macmillan & Co.
Scholastic Core Libraries, Levels D, F, H (H. J. Ashton).
Basic Reading Skills—Scott Foresman & Co.
Tactics, Levels A & B and Books I, II and III (Scott Foresman).
Penguin Primary Project—Penguin Education.
Gage Strategies for Language Arts—I—Jacaranda.

Science

Process Approach to Science (U.S.A. Edition).

Social Studies

Taba Curriculum Studies—Addison Wesley.

These together with a wide variety of texts supplied by the Department of Education make for a varied programme of work.

Panel 3.1—Socio-Psychological Dynamics of Learning Environments

The three characteristics as presented under Panel 3.1 above were accepted by the staff and some evidence regarding the quality of the learning environment is presented under Panel 4.3 below.

Panel 3.2—Instructional Strategies

The use of behavioural objectives is seen as highly desirable, and the writers also believe that students should be involved in the evaluation of their educational experience. A Behavioural objective approach was from the inception of Gabbinbar's operation, the basic element of the staff's philosophy.

> 'When goals are vague, the students are unable to exercise intelligent effective choice concerning the means of attaining the goals. And, of course, since teaching-learning is a co-operative venture and schooling is an organizational undertaking, lack of clarity concerning goals contributes to lack of articulation and co-ordination'.

The student is responsible for choosing his subject and the time when he deals with it. Children assist in the decision with regard to method in the

initial stages by discussion with other students in his group or with teachers. When the student is satisfied that the objective is reached, he presents himself to the teacher for evaluation. If the teacher is not satisfied, a diagnostic process is set up by the teacher/student team and a remediation programme is prepared.

(Modifications of this method are made for the Junior and Infant Departments.)

Panel 3.3—Scheduling and Staff Utilization Patterns

The School is divided into three Departments:

Infant—children in their first and second years at school (four teachers and 136 children);

Junior—children in their third, fourth and fifth years at school (four teachers and 122 children);

Senior—children in their sixth and final years at school (two teachers and 65 children);

with a teacher/student ratio overall of 1:32.

Within the general policy framework, the teachers of each department are as a group responsible for the methodology. Where a teacher has special interests, e.g. music, speech, sport, inter-department transfers for special purposes take place. These are mutually arranged between staff concerned. Within the Departments teachers prepare and teach co-operatively as this allows them best use of their personal and subject strengths.

Though departmentalism is evident there is a general over-riding concern for the school as a whole. The administrative style of the Principal is characterized by open leadership.

Panel 4.1—Characteristics of Graduating Students

As the school has been operating for such a short time, it was not considered feasible to undertake an evaluative study of characteristics of graduating students. However, a survey of parents' attitudes was undertaken and is reported briefly in the Appendix.

Panel 4.2—Teacher Attitudes

The instrument developed by Barth was administered to the seven staff members in January, 1972, and administered again in April, 1973. The results are presented in Table 3 below.

Barth's instrument measures attitudes teachers hold in regard to a number of assumptions (24) about children's learning and a number (5) about knowledge.

In all areas, the seven teachers who answered the form in January, 1972, and again in April, 1973, moved from the positions they held on each

question between the first and second application and the movement was in the direction of a philosophical position more supportive of open-space education as defined elsewhere in this paper.

Table 3

Item 7

Children have both the competence and the right to make significant decisions regarding their own learning.

The general movement was from 'disagree' in 1972 to 'agree' (1—strongly agree) in 1973.

Item 13

Concept formation proceeds very slowly.

Five teachers who in January, 1972, 'disagreed', moved to 'agree'.

Item 22

Learning is best assessed intuitively by direct observation.

A general movement from 'no strong feeling' to 'strongly agree'.

Item 28

Little or no knowledge exists which is essential for everyone to acquire most diversity in responses.

Strongly disagreed	1
Disagree	2
Agree	2
Strongly agree	2

The respondents' involvement in an open space situation changed their attitudes in the direction of what Barth says is held by most 'open' educators in Britain and America, and that for those who are in sympathy with the assumptions, success at a more difficult job is more likely.

Panel 4.3—Innovative Professional Leadership

While it is difficult to gauge the impact that the experience at Gabbinbar School has had on innovation in the region, it is clear that on several criteria it is distinguishable from other schools organized on more conventional lines.

Conclusion

In this paper, important characteristics of open-space education have been outlined in terms of Stufflebeam's C.I.P.P. (CONTEXT - INPUT - PROCESS - PRODUCT) model. An evaluation of the first years of operation of an open-space school in Queensland is described and several comments are made in respect to the problems of this year of operation and achievements.

A most appropriate conclusion to this paper is to quote from Nyquist who suggests the goals of open-space schools are:[16]

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[16]Nyquist, E. B., The Concept of Open Education. *Education Digest*, November, 1971.

'1. Happy children who feel successful and confident.
2. Self-disciplined children who have wholesome attitudes toward life and learning.
3. Independent thinkers who are self-propelled and continuing learners.
4. Readers who are increasingly fluent and who enjoy reading.
5. Children who write because they want to record and convey thoughts.
6. Competent students who are able to cope with fundamental math, science, and social science concepts because these are necessary to answer important questions and to solve problems'.

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Appendix

Of interest to readers may be an approach to internal evaluation undertaken over the period of third term, 1972, to April, 1973. All parents of students enrolling at the School during December, 1972, and January, 1973, were interviewed and subsequently forwarded a follow-up questionnaire during April, 1973.

Results of this survey revealed:

	Third Term, 1972	*April, 1973*
1. *Does your child enjoy school?*		
Very much	10	13
Reasonably	8	15
Not very much	5	—
Not at all	4	1
2. *Over the last three months of school, has your child had to do homework?*		
Yes	23	—
No	4	27
If yes:		
Did you think homework was valuable?		
Very much	1	
Reasonable	3	DNA
Not at all	18	
Did your child enjoy doing homework?		
Very much	2	
Reasonable	4	DNA
Not very much	5	
Not at all	12	
3. *Over the last three months of school, did you have contact with the Principal/Teacher (apart from attending P & C Meetings)?*		
More than 5	3	—
From 1 to 5	14	24
No contact at all	8	3
4. *Did you feel that the previous school genuinely treated your child as an individual and attempt to meet his particular needs and problems?*		
Yes	7	24
No	20	3
5. *How do you describe your child in terms of*		
(i) his/her ability		
Generally of high ability	6	4
Some special abilities	5	6
Generally average	8	12
Some weak areas of ability	4	2
Generally of low ability	4	3
(ii) his/her disposition		
Happy	6	10
Contented	12	15
Sometimes discontented	9	2
Mostly discontented	—	—
6. *What reporting system do you feel is more beneficial to you and your child?*		
Written reports with percentages and place in class	4	2
Personal interviews	13	20
Written reports without percentages and place in class	10	5

	Third Term, 1972	April, 1973
7. *What do you like most about Gabbinbar?*		
Pupils treated as individuals	—	9
Attempts to understand child by teachers (and children not as critical of slower children)	—	5
Friendliness of teachers	—	4
Parents are consulted and treated as partners in the educative process	—	6
No answer	—	3
8. *What do you like least about Gabbinbar?*		
Children are not pushed	—	7
Not made to sit down to eat lunches	—	3
Not made to wear hats at play	—	4
No answer	—	13

SCIENCE IN THE PRIMARY SCHOOL IN AUSTRALIA

S. W. ELLYARD

On 4th October, 1957, Sputnik I was launched and the Space Age commenced. The normal resulting increased interest in scientific achievement was intensified by the belief that the national prestige of, particularly the U.S.A. and the U.S.S.R. was involved in success or failure in the space race. Because it was considered that the early successes of the U.S.S.R. were in some measure due to the emphasis on science education in the U.S.S.R. at all school levels, a demand arose in the U.S.A. for increased emphasis on science education in their schools. Science education was introduced or extended in American elementary schools and programmes, such as the Elementary Science Studies were born.

This had an influence on Australia and during the 'sixties', all the Australian States introduced new courses of science study in their Primary (including Infants) schools.

It is my purpose to survey the aims, content and methods of implementing these courses and make some criticisms. There are, naturally, some variations, from state to state, in the aims, content and methods but I have endeavoured to present a general picture.

Changes in Content and Emphasis

Previously the primary science courses had been almost completely devoted to biological studies and were labelled Nature Study or something similar. The new courses had a very large content from the physical sciences to supplement and, to some extent, replace the biological sciences. This change is referred to in the preambles to some of the courses.

The Introduction to the Tasmanian Curriculum begins:

> 'In the past Science in the Primary School has been confined to the study of nature with particular emphasis on the realm of living things which occur in the child's environment. Because of the vast progress of scientific development in the world today, the introduction of physical science can no longer be denied'.[1]

The N.S.W. curriculum makes a similar statement:

> 'This course in Natural Science seeks to provide for the needs of children in a world of marked technological change and in a community increasingly influenced by the application of scientific principles. The new syllabus changes the former major emphasis on biotic aspects of science by giving scope for the treatment and study of the physical environment'.[2]

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[1]Education Department of Tasmania, *Curriculum for Primary School Science*, 1966, p. 1.

[2]Department of Education of New South Wales, *Curriculum for Primary Schools Natural Science*, 1965, Revision, p. 8.

It does emphasise that the biotic aspects are not to be neglected.

> 'It is not intended that this should depreciate the importance of our interest in the natural environment but rather that the modern child's awareness of the everyday use of science should be recognised'.[3]

The necessity of a balanced approach is further emphasised in the section, Planning of Courses.

> 'In his planning and selection of material the teacher will ensure that neither the biotic nor the physical aspects receives undue emphasis at the expense of the other'.[4]

However, as I hope to show later, there is room for doubt as to whether this balanced approach is actually made and as to whether such a balanced approach is desirable.

The Stated Aims of Primary Science Education

There is some variation in the aims stated in the various courses of study but in general the following are included:

1. To maintain the child's sense of wonder and spirit of enquiry.
2. To extend his interest in the world about him, thereby leading him to an appreciation of the interdependence of all forms of life.
3. To enable the child to enlarge his knowledge of the natural world and its phenomena.
4. To enable the child to develop skills of observation, classification, experimentation, inference and prediction.
5. To develop in the child an attitude of personal responsibility for the conservation of the natural heritage and an appreciation of the need for legal protection of the heritage.
6. To appreciate the effects of science and technology on everyday living. (Only Tasmania specifically refers to the 'potential dangers' though Western Australia implies a warning in several places *and Queensland refers to the 'limitations' of science.*)
7. To foster the growth of scientific attitudes and habits of clear, logical thinking. (Only Western Australia refers to the 'limitations of Scientific method'.)

All the courses of study emphasise that science education must be more than an assimilation of facts and that the methods of obtaining knowledge are at least as important as the knowledge gained.

The Queensland curriculum states:

> 'To offer science as a series of factual findings to be memorised for an examination, to use the experiment as a recipe with a known answer, will not only misrepresent science—it will crush the natural curiosity of the child'.[5]

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[3]*Ibid.*
[4]*Ibid.*, p. 10.
[5]Department of Education, Queensland, *The Syllabus Science*, 1966, p. 1.

Tasmania:

'Science is learned through discovery and observations'.[6]

South Australia:

'Children learn the ideas and concepts of science best through experiences which will enable them to see science as a process of enquiry rather than merely as a body of facts to be learned'.[7]

New South Wales:

'The object of the Natural Science Course is such that method rather than content is of the first importance in presentation'.[8]

Western Australia:

'Facts must not be regarded as sufficient as ends in themselves'.[9]
'Science should be a source of activities'.[10]

Content of Courses

The range of topics and activities is very wide and in almost all states includes studies in astronomy, biology, chemistry, geology, meteorology, physics and physiology.

South Australia has a compulsory 'core' curriculum with additional supplementary topics from which choices may be made. Tasmania has a 'core' of recommended topics and a supplement of suggested topics.

New South Wales, South Australia, Tasmania and Queensland list topics for each separate grade throughout the Infants and Primary school. Victoria and Western Australia divide the material into three sections appropriate to Infants, Junior Primary and Senior Primary grades. Victoria is least insistent on a grade-topic relationship and children are allowed and encouraged to treat any topic or group of topics in a manner and to a depth they find interesting and worthwhile.

New South Wales, Victoria and Tasmania divide the material into three general sections:

New South Wales—Living Things; Physical Phenomena Related to the Child's Environment; The Earth as Part of the Universe.

Tasmania—Living Things; The Behaviour of Matter and Energy; The Earth as Part of the Universe.

Victoria—Matter; Energy; Life.

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[6]Education Department of Tasmania, *Curriculum for Primary School Science*, 1966, p. 6.

[7]Education Department of South Australia, *Courses of Instruction for Primary Schools*, 1969, p. 1.

[8]Department of Education, N.S.W., *Curriculum for Primary Schools, Natural Science*, p. 10.

[9]West Australian Education Department, *The Curriculum for Primary Schools, Elementary Science*, 1962, p. 4.

[10]Education Department of Victoria, *Course of Study for Primary Schools, Science*, 1968, p. 1.

Queensland has a fivefold division—Living Things; Conservation; The Earth in Space; The Surface of the Earth; Energy.

Western Australia is in the process of revising its curriculum. The present sections are—Plants and Animals; Geology; Physical Aspects; Energy and Machines; Solar and Stellar Systems; Social Aspects.

It is, naturally, impossible in the time available to list the topics for each state but the following topics are included in the curricula of most of the states.

Biology—Plants and Animals: discrimination; classification; representative types; ability to obtain energy and food; ability to grow, change, reproduce, protect themselves, perceive and react to their environment. Interdependence of living things. Plant and Animal environments; adaption to the environment. Conservation, specially of rare species.

Physics—Heat: sources; transmission; measurement; effects on state and size. Light: sources; reflection; refraction; colour; mirrors and lenses. Sound: production; pitch and volume; transmission through media; speed; musical instruments. Magnetism: attraction and repulsion; poles; magnetic compass; earth magnetism; magnetic fields; magnetism and electricity. Electricity: static; attraction and repulsion; like and unlike charges; current: simple circuits, cells and batteries; heating and lighting effects; fuses; electromagnets; galvanometers; motors; generators. Force: kinds; gravitation; air and water pressure; use of wind and water; simple machines. Energy: sources; forms; energy changers; effects.

Chemistry—Burning; rusting; effects of heat on foods and materials; acids; crystals.

Astronomy—Sun; moon; planets; Milky Way; prominent constellations; time, tides; eclipses; distances; man in space.

Meteorology—Atmosphere; winds and wind belts; temperature; rainfall, clouds; hail; frost; snow; dew; lightning; weather maps; weather records.

Geology—Earth's crust; types of rocks; rocks and soil; metallic minerals; coal; petroleum; fossils, erosion; formation of rocks; volcanoes.

Physiology—Skeleton; major organs; brain and nervous system; ear; eye, senses; foods.

With such an abundance of material, it is obvious that selection is essential. The choice of topics is generally left to the individual teacher, though, as has been previously mentioned, South Australia and Tasmania have some mandatory material. If the aims of the curricula are to be achieved there is a need for a balanced choice. The instruction in the N.S.W. curriculum has already been quoted. There is a similar one in the Western Australian curriculum.

'The precise allocation of these topics to a particular standard is left to the teacher, who can select areas of activity to suit the children's needs in any particular locality. Heads should ensure that representative studies

are undertaken."[11] However, there are factors which work against the maintenance of a balance.

Selection will depend to some extent on the interests and knowledge of the teacher. This is natural and reasonable and with extension of interests and knowledge a nicer balance should result.

There is also a tendency, particularly in the upper Primary school for a weighting towards the physical sciences. This is due, in some measure, to the increasing interest of the children, especially the boys, in machines and physical phenomena but there are other factors which increase the tendency. The biotic environment does not always lend itself easily to study. The problems may be wide ranging and not easily isolated and the teacher may not always feel confident to handle the questions he may be asked. Experiments in the physical sciences are more easily controlled and observations more easily directed. It is comparatively simple and quick to set up a simple electrical circuit, to illustrate the more spectacular effects of air-pressure or discover that gases expand when heated. There is something approaching a conjuring trick about many experiments in physics and chemistry and the child is suitably impressed. Whether he always appreciates the principles underlying the observations is another matter. It is frequently neither simple nor quick to observe accurately the form and behaviour of living things and their response to stimuli. Most physical observations and experiments can be performed neatly, quickly and conclusively in the classroom. Biological observations and experiments are often lengthy and indeterminate and the majority of them should be carried out outside the classroom and often at some distance from the school. Therefore they tend to be avoided or performed inadequately except in Infants schools.

Properly implemented in letter and spirit these courses would fulfil the aims of science education in the primary school. They would give the child considerable insight into his biotic and physical environment and his own relationship to it. They would provide opportunities for discovery and intellectual, sensory and social development. They would provide training in scientific method. They would even, under the guidance of imaginative and concerned teachers, give the child an appreciation of the value of his natural heritage and the dangers that beset it.

However, I consider that primary science education, at present, is open to criticism in three main areas.

In the first place do these courses provide the proper content for children in Infants and Primary schools?

For almost all children the topics, and especially those in physics and chemistry will be treated in greater depth at Secondary level. This is, certainly, not a valid reason for the complete exclusion of such material from Primary courses but there are some topics which could be handled much

[11]West Australian Education Department, *The Curriculum for Primary Schools, Elementary Science*, 1962, p. 4.

more effectively under laboratory conditions in the Secondary school. Accommodation and equipment in primary classrooms is not always conducive to accurate observation, results and conclusions. I shall have something to say about apparatus later.

A decrease in the physical content would enable more time to be devoted to the biotic content. Even if the child follows the balanced programme suggested and, as I have stated, this is not always the case, he will devote between one-half and one-third of the available time to the world of living things. This is inadequate at Primary level, particularly as it is very likely that he will devote a much smaller proportion of his science studies in Secondary school to biotic studies.

Children of primary age are interested in magnets, batteries and bulbs and in the peculiar behaviour of air and water under certain conditions. They are also very interested in living things, especially animals and in collecting and classifying things. We must capitalise on these latter interests as early and as fully as possible. It is vital that the child has as much knowledge and understanding of his living environment as possible, and as early as possible, because of the attitudes and sentiments based on this knowledge and understanding. Attitudes gained in early childhood are very persistent. Fears and dislikes gained then often last through life. How many traumas concerning spiders, bats, frogs, snakes and even worms and moths result from fears through ignorance in childhood? How many harmless and even useful creatures have been destroyed because of these fears? It is rather discouraging to read in the Curriculum Handbook of one state that fifth grade pupils are to be told that:

> 'unless you are sure of your spiders, it is wisest to treat them all as dangerous'.[12]

One would have thought that well before fifth grade, children would have learned to recognise and respect the very few dangerous Australian spiders. To the best of my knowledge, there is only one dangerous spider in the state concerned. We must help to develop a respect for all life through the 'understanding which casteth out fear'. It is not that we must not kill anything but that when we are compelled to kill it is for an objective, logical reason. If we do develop a respect for the lesser forms of life, we may eventually have a respect for human life, even it differs minutely from our own.

More emphasis must be placed on the world of living things just because, to repeat the quotation from the New South Wales curriculum, the children are 'children in a world of marked technological change and in a community influenced by the application of scientific principles'.[13]

They are in a world where there is less and less nature to study and unless we make them fully conscious of the living world, its total inter-

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[12]Education Department of Tasmania, *Curriculum for Primary School, Science*, 1966, p. 62.

[13]Department of Education, N.S.W., *Curriculum for Primary Schools Natural Science*, 1965, Revision, p. 8.

dependence and their dependence on it, 'technological change' and the 'application of scientific principles' may solve the problem of Nature Study by abolishing nature. In the second place, effective science education needs more than an excellent curriculum. There are other basic necessities.

The physical environment must be appropriate. Classrooms with fixed desks, and many such still exist, are not very conducive to group and individual discovery techniques and incline teachers to perform the experiments themselves while the children look on. Movable tables make the task more possible and 'open-space' areas go farther still. Perhaps it is not too much to hope that one day primary schools may be equipped with a room where free movement is possible and water is readily available. Many playgrounds would benefit considerably as sources of biotic studies by the provision of a 'bush-area' where nature is allowed to riot. This would reduce the necessity for distant excursions and encourage teachers to get out of the classroom.

Some basic apparatus is essential. Primary experiments are usually done using 'makeshift' equipment. This is actually recommended in some courses. For example, New South Wales states:

> 'Apparatus should not be elaborate. It is preferable to use everyday materials where possible. They are more meaningful to the primary child than specialised science equipment'.[14]

I doubt the entire truth of this. In my experience children prefer 'proper' science equipment. Admittedly, the simplest apparatus should be used for experimental work at any stage, always provided its use will not jeopardise the success of the experiment.

Not all children (or teachers) can accept with equanimity this statement from the Tasmanian curriculum:

> 'If it (the experiment) is a failure, they (the children) can reconsider the steps to find out where it went wrong'.

Experiments will go wrong but they should not go wrong because the equipment is unsuited to the task.[15]

New South Wales does issue a basic kit of science apparatus to primary schools but the issue is inadequate for group work and has to be supplemented from school funds. Some other states issue certain items but most of the apparatus has to be purchased from school or parents' funds in competition with other equipment. It is obvious therefore that few schools are adequately equipped when the cost of a binocular stereoscopic microscope is approximately $50.

In view of the importance which is placed on the subject, time allocations seem inadequate. To quote New South Wales specifically: The time allotted ranges from 40 minutes per week in First Grade to 60 minutes per

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[14]*Ibid.*, p. 44.

[15]Education Department of Tasmania, *Curriculum for Primary School Science*, 1966, p. 6.

week in Sixth Grade. This compares unfavourably with allotments of 180 minutes in First Grade to 225 minutes per week for Social Studies. All courses emphasise the importance of field-studies and excursions. These are vital in urban areas where local areas for bio-study are limited but it is quite possible to use a fortnight's science-time travelling to and from the study area.

Many teachers lack the knowledge to adequately implement these courses. Statements in the courses confirm this. The Western Australian curriculum states:

> 'In the early years of a teacher's work he will probably be wise to do first the area of study where he has knowledge, but he, like the children, should be ever widening the sphere of his interests and knowledge. With very little detriment to proceedings he can virtually learn with his children. The teacher who fears loss of prestige by admitting ignorance in some fields can be assured his fears are not well-founded'.[16]

The introduction to the handbooks relating to South Australian curriculum states:

> 'Don't let the idea of teaching Nature Science frighten you. It's not nearly as hard as you think. Don't judge your future experience in Nature Science by the past. You have some points in your favour.
>
> 1. Almost all girls and boys have a natural interest in Nature Science.
> 2. They don't expect you to know all the answers to their questions.
> 3. You can "discover" with the children'.[17]

There is some truth in these statements. All teachers are constantly widening the sphere of their interests and knowledge. They will learn and discover with their children. Children do not expect the teacher to know the answers to *all* their questions (but they do expect answers to the majority). To consider the 'discovery method' as the partially-sighted leading the blind is to prostitute the concept. The effectiveness of the 'discovery method' depends greatly on the guidance and inspiration of the teacher. He must know more than his pupils. He must be able to answer certain of his pupils' questions and he must know which question to answer and which questions to ask. He must be competent and confident. He will not reveal all his knowledge but the fact that he has this knowledge will make him competent and confident.

Teachers entering schools recently from the colleges are much better equipped to teach science. Teachers who have been in the service for some time need in-service courses. It is interesting that when teachers in the A.C.T. were asked to select in-service courses to be given by the Canberra College of Advanced Education one on science was given a high priority. In addition

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[16]West Australian Education Department, *The Curriculum for Primary Schools, Elementary Science*, 1962, p. 4.

[17]Education Department of South Australia, *Course of Instruction and Handbook, Grade V*, 1969, p. 5.

there is a need for more library and other resource material and for advisers in science-education who can assist teachers.

My third criticism is that none of the courses provides adequate guide lines for a modern conservation education suited our 'world of marked technological change'. Admittedly, several of the courses were prepared before conservation and pollution had become the public issues they are now, but the Victorian course of study issued in 1968 makes only a brief generalised reference to conservation in Notes on the Course.

Attempts to remedy the deficiency are being made in some states.

The new draft Western Australian curriculum includes themes for investigation and discussion at senior primary level. Two of these are:

> 'Over-population, over-consumption and pollution may endanger animal and plant communities and destroy soil structures'.
> 'Man may derive benefit from the conservation of resources and improvement of his environment'.[18]

New South Wales has appointed a conservation adviser to assist teachers in conservation studies. He has prepared an integrated syllabus which has been published in the official departmental journal 'Education Gazette' and which may be followed by teachers interested in environmental education but the decision is left to the individual teacher.[19]

Tasmania includes in the aims of its science education the following:

> '7. Through a deep and abiding appreciation of his environment, to help the child to realise his personal responsibility for conservation and the need for laws to protect our natural heritage.
>
> 8. To awaken the realisation of the wonderful benefits of science to the welfare of mankind and at the same time an awareness of its potential dangers.'

However, detailed references to the implementation of conservation is restricted to the need for protection of plants and animals.

South Australia makes no specific reference to conservation in its science syllabus *but Conservation is included in the Social Studies programme. Conservation Day is held in October and prior to the day the syllabus suggests that social studies lessons and other correlated lessons be devoted to the study of the conservation of water and fauna. There is a strong emphasis on activities which involve children directly.*

The inclusion of conservation in a social studies programme when it is more usually assigned to a science course is a pointer to the possible integration of science and social studies at the primary level in a combined course which might be named Environmental Studies with the word 'environment' having a wider connotation than it is usually given.

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[18]West Australian Education Department, *Draft Syllabus*, 1962, Animals.
[19]Department of Education, N.S.W., *Education Gazette*, Vol. LXIV, No. 2, March, 1970.

Only in Queensland is conservation made a clearly defined study at all levels.

The study is based on the theme, 'The wise use of natural resources for the benefit of mankind' and emphasises the need for conservation of living things, air, water and soil.

However, even in Queensland the emphasis is on the preservation of rare plants and animals, the prevention of bushfires and soil erosion and the storage and purification of water.

These are important problems and children must be made aware of them but, unless treated a very imaginative teacher, they will have little immediate impact on the interests of the great majority of children who live in cities and who feel that they can do little to affect them. It is almost an impossibility to make a child feel personally responsible for matters removed from his immediate environment and his life. Yet, it is this feeling of personal responsibility for conservation that must be developed. The child must be personally involved.

It is easy to wax sentimental about the destruction of whales and kangaroos in the abstract. It becomes a personal decision when the child investigates the meat in his dog's tinned food. It may be neither whale nor kangaroo but the problem is worth investigating.

Paper-making is related to cutting down of trees, use of energy and perhaps water pollution. An investigation of the use (and overuse) of paper for wrapping, reading, packaging and writing and the disposal of used paper will involve the child in these aspects of conservation and perhaps lead him to make some personal decisions which will affect conservation.

There are hundreds of suitable problems which can be profitably investigated. Some are:

The effect of burning garden rubbish on the soil, small animals in the soil, the atmosphere.

The amount of water used in a shower, by a leaky tap or an unattended hose.

The noise level of the family car, big brother's motor bike or the local pop-group.

The number of unnecessary miles travelled by car.

The number of non-returnable containers bought by the family and their further use and disposal.

These are problems capable of scientific investigation. INSPECT has shown that children are interested in them and young people have shown considerable ingenuity in investigating them. They are problems which affect the child directly and which make him truly aware of his personal responsibility for the conservation of resources and the protection of the environment.

One final remark on conservation. Although all the courses include studies on energy, not one mentions that energy is a scarce resource which is being excessively used and largely wasted.

In conclusion, a survey such as this in the time available is not likely to be just to all concerned. I know many teachers who are very competent science-educators. Administrators are conscious of present shortcomings in science education and are working to overcome them. Colleges are sending out better-equipped teachers. I have perhaps overstressed the deficiences and under-emphasised the strengths, but we are living in a world of marked technological change and the rate of change is constantly increasing. Time is not on our side. It is essential for their survival that science-education at primary and other levels be such that it will help our children to solve the problems that they will all too soon have to face as adults.

ADOLESCENT VALUES AND THE SECONDARY SCHOOL

B. BRENNAN

Introduction

The theme of this Conference is 'the educational process'. In our industrialised society the notion of 'process' may mean for some processing or manufacturing by which some raw material is made into some product. Whereas the idea of children being raw material going through a process to become some finished consumer goods may be considered as being too crude a concept, there are nevertheless people—including parents and educators—who seem to be infatuated with the hardware and software of the educational process. While advances in educational technology are to be applauded, an overemphasis on what is after all only an aid in the educational process can produce educational programmes that seem to reflect a 'manufacturing' mentality towards the educational process.

When Sir John Crawford suggested that the only special consideration in educational administration (in contrast with other forms of administration) was that it was concerned with children, the reaction by some involved in education was that this was a criticism and a devaluation of educational administration. However, such a comment from a leading academic reminds those concerned with education and schooling that the distinctive feature of not only educational administration but also of the whole educational process is children, young and old . . . so for the sake of the children, beware of educational processing.

At the other extreme point of view of the educational process, there are those who consider the process as a one strand link between educator and taught, as an isolated face-to-face relationship between student and teacher. And while on one hand advances in the individualising of instruction and catering for personal needs must be warmly supported and on the other hand while the challenge of the de-schoolers must be considered and answered, the fact still remains that there are, and will be for some considerable time, large groupings of students for instruction in schools, colleges and classes. There will be institutions varying in size, internal organization and social and cultural setting and students will be associated with these institutions for varying lengths of time.

What is being suggested, then, in this paper is that there are factors associated with what can be loosely termed the 'institutionalization' of education that may be relevant for the educational process. It is further suggested that such factors may be important for the educational process but that they are often neglected or based on false assumptions.

From the vast area of factors associated with the institutionalization of education, the following paper discusses the question of student values within that institution called the secondary school (or college).

The Problem

It is suggested that those involved in the educational process within secondary institutions do make assumptions about their students' values and the effect of these on the educational process.

Following are some comments that the writer has heard—and feels sure others have heard—in staff-room conversations:

> 'You have to start from the point that the students here do not want to learn or do well in their school work. The boys are interested in sport and the girls are interested in the boys.'
> 'It's hard to get through to the students here as there is too much pressure on them to conform to what their mates do.'
> 'The opinions and attitudes of the students here are not their own but are just the old family prejudices handed on.'
> 'The students here seem to lack the drive and enthusiasm of the adolescents when I went to school (or of school X).'

As one would expect in such comments, based as they are on personal experience or recollection or generalising from too few cases, there are contradictions evident. The point can be made then that such personalised notions are not a satisfactory foundation for assumptions about student values and their possible repercussions on the educational process. If the teacher believes that his/her students place no value on work or that peer group conformity is a key factor, then this will influence his/her approach to teaching.

If it is conceded that 'institutional' factors are likely to be important for an understanding of, and the effective working of the educational process, and if it appears that assumptions, albeit inaccurate assumptions, are likely to be made about such factors, then it would appear to be desirable to make some effort to find out about these factors, in this case the values of the adolescents within the school or college.

There are two avenues open to the educator who seeks to gauge the values of the students within his/her school or college. Reference may be made to published research findings or some attempt may be made to carry out a survey within the institution.

Research

The Australian educator can consult a good deal of research from North America. There has been an on-going controversy regarding the existence of an adolescent sub-culture, a creation of industrialised/urbanised society and of society's separation into institutions called schools and colleges of adolescents for increasing periods of time. Studies by J. Coleman and C. W. Gordon have suggested that for a series of schools—the former—or in one school—the latter—such a sub-culture is evident and that its values may conflict with the official policy of the schools and with adult expectations of the school's role and performance. Other studies have questioned the existence of this adolescent sub-culture, generally or in specific socio-economic areas. Critics of the notion of the adolescent sub-culture have been Epperson and Elkin and Westley. A recent article by D. C. Hickman in 'The Australian

and New Zealand Journal of Sociology' (7, 2, October, 1971) has discussed the broad issues concerning the interpretation of adolescence.

But for the Australian educator, apart from the interesting issue as to the degree to which our secondary schools have spawned this sub-culture, there is the problem of the cross-cultural comparison and generalization of research. Therefore, a search is necessary for research within the Australian milieu. In addition to such general studies such as those by Connell, on growing up in an Australian city, and Campbell, on growing up in a country town, there are a number of more specific reports. A brief review of recent articles in a range of journals indicates the scope of research reported on Australian adolescents.

In the 'Administrators' Bulletin' (3, 7, September, 1972) Sister Moira Creede reported on an investigation into the relationship between the climate in classes and the types of student leadership emerging in these classes. From her categorization of classes and leaders emerge some tentative relationships and suggestions for further study.

In the 'Forum of Education' (XXI, 2, September, 1972) Ngoc-Trang Thomas and J. K. Collins reported on their study of the susceptibility of sixth grade primary and first form secondary students to peer group influences. They found a good deal of individual differences in their pre-adolescent group and commented on the possible effect of the pattern of schooling on their results.

A study by L. Broom and F. Lancaster Jones, reported in 'The American Journal of Sociology' (but probably more accessible as Chapter 10 in F. Katz and R. K. Browne's 'Sociology of Education'), discussed the issue of social mobility as revealed in the relationship between the occupation of the father and the son, not only within the broad context of Australian society but also on a comparative basis with Italy and U.S.A. For those concerned with institutions within the metropolitan areas, there is interesting evidence of a relationship between social backgrounds and types of schools in an article by F. J. Hunt in 'The Australian and New Zealand Journal of Sociology' (8, 3, October, 1972).

A series of articles in the 'Journal of Christian Education' (9, 3, December, 1966; 10, 1, June, 1967; 10, 3, December, 1967) discussed values in the secondary school. The three articles present a theoretical framework, the instrument that was used and then discussed the findings.

For those who find in their schools and colleges important, but possibly minority groups, such as migrants or Aborigines, there have been some important writings. 'The Australian Journal of Education' (15, 3, October, 1971) contains the report of a piece of research carried out in Adelaide on the relationship between nationality and social choice. The writer concludes that although there is a relationship between nationality and social choice, other factors such as age, sex and the overall composition of the group are likely also to be important factors in social choice. In addition, two numbers of the A.C.E.R.'s 'Quarterly Review of Australian Education' (4, 2, June, 1971, and 4, 3, September, 1971) have been devoted to the interaction, assimilation and education of European migrants and their children.

In the field of Aboriginal education, 'The Australian Journal of Social Issues' (3, 4, October, 1968) reports a survey of the educational standards of people of Aboriginal descent in the Brisbane area and discusses the implications for social and educational policy-making. Also, there is the very readable report of the N.U.A.U.S. Summer School entitled 'Aboriginal Education: The Teacher's Role'.

While certainly not wishing to minimise the importance or value of the sort of research reported above, it is still important to note a caution for those who might seek to apply the results of research, with its controls and special conditions, to another situation without the controls and in another set of conditions.

It would seem then that the educator is faced with the second alternative, surveying adolescent values within his/her school/college.

The following reports how this was done in a particular school, the findings, and the implications for the educational process within the school.

The Survey

The research consisted of a survey carried out by means of a questionnaire to all students of the school at which the writer was a member of the staff during the third term in 1972.

Following discussion with staff and students and reading the literature, three areas were selected for study:

(a) the school and education,

(b) adolescence, and

(c) local, national and world problems.

Thirty questions were drawn up—ten for each area—and discussed with staff and students. The number was reduced to a final set of 12– four for each area. The final selection was a subjective one but account was taken of the discussion and the atmosphere of the school at the time.

Care was taken with the instructions so that they would be clear to all students and some trial questions were completed with select groups.

The questionnaire made no provision for the student's name and from informal discussion it was believed that this increased the honesty and frankness of the responses.

The questionnaire was administered by the writer personally over a two-week period to class groups.

A word of explanation is necessary on the definition of 'values'. Values, it is agreed, are not the same as opinions. Yet the questionnaire sought to gain the students' opinions. This was because the research was geared to define values as 'generalised opinion'. That is, the opinions of the students, as a whole or in sex or age groups, could be looked at in the three areas being studied and generalisations could be made from these expressed opinions about the values they revealed. Therefore, the answers for a particular group (not an individual) to the questions in one of the three areas

were noted, and these answers allowed for generalisations to be made about the values implied by these opinions.

The second element in the questionnaire related to the sources of the students' opinions. On the basis of a study of the literature, three sources were included:

(a) home and family,

(b) school,

(c) peers.

Just as the values in the three areas were drawn from the opinions expressed by the students, the relative standing of the three sources was generalised in terms of the three areas under study. If the values of the students are important for the functioning of the educational process, then the sources of these values may also have important implications for the educational process.

The School

The school in which the questionnaire was administered was a co-educational departmental secondary school in rural New South Wales. The population of the town area was approximately 2000 with a further 2000 living in the district on farms or in a number of villages surrounding the town. The chief farming interests of the area were wool and wheat.

The school's population was 439. Within this population there was an Aboriginal minority of 50. The trend in the school's population over the previous five years had been for the upper forms of the school (V and VI) to expand considerably in size, from 28 in 1967 to 75 in 1972, although there had not been a proportional increase in the school's intake in Form I.

For the purposes of the survey the population was broken down into grade and sex groups as follows:

Form	*Boys*	*Girls*	*Total*
VI	16	23	39
V	16	20	36
IV	34	39	73
III	46	36	82
II	44	51	95
I	51	63	114
	207	232	439

Results

The students' responses for each of the areas studies are examined question by question and their opinions, as a whole or for specific form or sex groups, discussed. Then a comment is made on the values, i.e. generalisations from the opinions, of the students in that area.

Values

The School (refer to Table 1)

Question 1. The consistent choices here were for A and D and the other choices were not favoured. There was a tendency for the girls to favour

'school subjects'. The clearest variation to the pattern was in Form IV with both girls and boys, and to a lesser extent in Form III, and the trend was for the social purposes of the school to receive greater attention.

Question 4. 'To do their best' was the overwhelming choice, and the polar choice D was largely rejected. This choice was made irrespective of the student's sex or ability level. In the senior forms (V and VI), however, there was a tendency to modify their response from A. The large number of Form I boys (15) replying that they wanted to do as little as possible was examined further. The group did not come from a single class, nor did they make their peers as a choice of their reference group for their opinion. Such an unusual figure, however, would require special attention.

Question 7. For boys 'athletic champion' received the popular choice, with dux and captain receiving strong support. Only in Form I did the boys relegate athletic champion to their third choice favouring dux and captain in that order. For girls, the overall popular choice was captain. This was strongly influenced by strong support in Forms II, III and IV. Taking the school as a whole there was support for all four choices, except D with boys.

Question 10. Few, even among the senior students, viewed the school's purpose as being a preparation for tertiary study. The vocational choice was the most popular overall, even in Forms I and II where the prospect of leaving school for employment is more remote. At the other end of the school, the senior Forms took a broader view. For girls the school's proper function had a strong social element as evidenced by their ranking of C and D.

From the cluster of opinions chosen by the students some tentative suggestions can be made about student values for the school and education. The students' values seem to be a mixture of the pragmatic and the idealistic. They appear to want to do their best all the time and become captain and dux. On the other hand many want the school to help them to get a good job and get along with people. There is also the distinction between the immediate and the deferred value of their school. It should be helping them now, and it should be helping them for the future.

While on the one hand those involved in the educational process at this particular school may interpret the results in terms of the school appearing to satisfy a wide range of needs, it may also be argued that there may be a good deal of confusion evident from the responses. Beyond argument, however, is the point that for differing age/sex groups the school's importance and function varies.

Adolescence (refer to Table 2)

Question 2. The age of 18 years received the popular vote. However, as the students came to reach the age themselves, Forms IV to VI, there was a tendency for them to seek to delay the voting age to 20 or 21. In general, there was a tendency for the girls rather than the boys to seek to delay the age of franchise.

Question 5. Answer D, 'that the work will interest you' received a commanding vote. This was reflected in all Forms and for both sexes. The

interesting question is how the students would know whether the work would interest them until they were engaged in it. Perhaps the lack of local job opportunities and the non-visibility of a wide range of careers influenced this choice.

Question 8. This question was answered making use of all the alternatives offered. A clear pattern did not emerge, suggesting perhaps some uncertainty as to the comparative difficulty of adolescence.

Question 11. This question was included for two reasons. Firstly, there was at the time of the administration of the questionnaire a good deal of national publicity on the health hazards associated with smoking and this had been referred to at school. Secondly, the writer had made, on the basis of talking to students and observing them out of school and on excursions, a subjective estimate of the degree of smoking among students. The question was used, therefore, as a rough check on the honesty of the responses, and the figures from the survey correspond with the subjective estimate.

Generally a tolerant attitude was favoured, answer D. There was a tendency, however, among senior girl students for them to suggest that students should be discouraged from smoking.

It was assumed that the smoking was of cigarettes and not 'pot', and this assumption was never questioned, either formally or informally.

What values about adolescence can be generalised from these opinions? There was a tendency towards conservatism in this area, particularly as the girls grew older. There was also a strong idealistic tendency, e.g. in relation to career choice. The more practical alternatives were rejected in favour of an answer about which the students could know very little at the time of their choosing a job. There was also uncertainty evident in the opinions about the difficulty of adolescence. The widespread habit of smoking, however, gives an interesting insight into student values. It may be that smoking is valued as demonstrating a characteristically adult habit or of showing defiance to adult wisdom. But perhaps more importantly, in the uncertainty of growing up and what it is all about and whether it is harder today than yesterday a habit or piece of behaviour such as smoking could be given a prominence out of all proportion to its real importance. Further, the apparent widespread participation in smoking and more widespread tolerance of it suggests that other habits, such as the use of drugs, could readily be absorbed into the students' value and behaviour pattern.

Local, National and World Problems (refer to Table 3)

Question 3. As one might expect from adult respondents, there was a wide range of choice for the solutions to the road toll. Answers B and D however were the most popular. There was generally equal favour for the punitive choices (A and B) and the remedial ones (C and D).

Question 6. Both sex groups were consistent in their choices and there was also consistency through the Forms. Pollution, then inflation, then agriculture and finally population.

Question 9. The priorities varied according to the sex of the students. For the boys the priorities in descending order were: peace, hunger, colour and

communism. For the girls the rankings were: hunger, peace, communism and colour.

Question 12. The choice of Answer A by the vast majority of students was the most significant evidence to emerge. Other choices were scattered throughout the school, but most significantly among the senior boys.

The strong support for the idealistic response in Question 12 suggests that such an approach may have coloured the students' answers to other questions, particularly Question 9. The fact that there was within the school and district community a social problem with regard to the Aboriginal people was not seen by the students to be their particular link with a world problem. There was little evidence of a developmental pattern in their choice of alternatives, for example, in which the younger students would choose localised problems, e.g. agriculture and the older students a problem of a more general or abstract nature. And when to this is added the idealism as expressed in Question 12 and the lack of awareness as in Question 9, one can detect a rather confused value pattern in this area, and a rather confusing pattern to follow.

Sources (refer to Table 4)

The students' choices of the reference groups for their opinions, when analysed, illustrate some important factors that appear to be highly relevant for the educational process in the school.

On the set of questions related to the school (1, 4, 7 and 10) the reference groups indicated by the students as a whole indicated that the school itself was most important in influencing their opinions, that the family was second in the number of times it was chosen and the peer group least frequently chosen. Variations to this pattern occurred when the Form V girls and the Form I boys indicated a first priority to the home and the senior boys (Forms V and VI) indicated the pre-eminence of the peer group.

It would appear, then, that the school itself—the principal and staff, its policies and traditions, as well as the influence of non-peer members of the school group—has a good deal of influence generally on the opinions of its students regarding schooling and education. While the prime influence of the home seems to be too diverse—senior girls and Form I boys—to be significant for the overall situation, the fact that the peers are of primary significance for the senior boys suggests an important factor to be taken into account in the organization of the school and the various aspects of the educational process.

In the area of adolescence (Questions 2, 5, 8 and 11) the family was accorded most significance as a source for opinions in all groups, except Form V girls. This group gave to their peers primacy of influence. In all other Form/sex groups the peer group scored the second highest number of choices. In *all* groups, however, the school was chosen least often as a source of opinions in this area. The family emerges then as an on-going influence of the highest importance in helping the adolescents at this school in developing their opinions about themselves and their stage of development, and the school is disregarded or rejected.

In terms of the uncertainty that was noted in the discussion of students' values in this area, there appears to be a strong indication that the school, held to be important in influencing ideas about school and education, has a field ready for its concerted action—as part of the educational process—in the area of adolescence and its problems. In such a venture into this field, the relative importance of the family and peer group, overall and with specific Form/sex groups, should be carefully considered.

In examining the area of community, national and world problems (Questions 3, 6, 9 and 12), the family again proved to be the prime influence on student values. The only exception to this was with the Form V boys who (perhaps strangely) accorded to the school prime influence. For the remaining sub-groups the school rather than the peer group was rated the second most important group except for Form VI girls, Form IV boys and Form II girls for whom the peer group was rated ahead of the school as the second most popular influence. Whether or not the school in its various subjects and overall programme as part of the educational process sought to exert some form of influence on the opinions, and therefore the values, of its students, it would appear that at this school at the time of the survey, the home emerged as the major influence for opinion and value formation in this area.

Three important features emerge from the analysis of the sources of the student opinions. The most striking point is the influence of the family, figuring as the most important influence in two of the three areas studied. The second point is the rejection of the school as an influence of opinions and values in the area of adolescence and its problems. The third point to be noted is that the peer group has a widely varying influence on student values. The influence seems to vary according to the Form and sex group and according to which of the three areas studied is being considered. Finally, it can be noted that data such as this should be highly relevant to assumptions about the educational process and important for the policy-making of the school.

While it would appear that the evidence of the survey in this particular school would lead to the rejection of the adolescent sub-culture thesis, it does stress that this particular school was in the country in a fairly isolated area and that an adolescent sub-culture may tend to emerge in some larger metropolitan areas. But this report concerns just one school. What can be noted, then, about the values of the students at this school?

Conclusion

The most important factor to emerge is that no strong pronouncements can be made about the school as a whole. Certain factors appear to be important for particular Form/sex groups but overall only tentative notions can be advanced. Over the range of the six Forms for both the males and females there are such wide-ranging changes that generalisations, such as those made in the staff-room comments noted above, are difficult and dangerous.

However, if some general developmental pattern is to be noted, with reservations, then it would follow this sort of pattern. The values of the younger students are very idealistic and unrealistic and while this tends to

be preserved among some students throughout their school career, there seems to be a period, at its peak in Form IV, when confusion is most evident and then for those who survive their secondary education the value pattern turns to either a more conservative view, a cynical view or just a broader, perhaps even more mature view. But then concomitant with these sorts of development, there is also a pragmatic line running throughout the Forms for both sex groups.

What importance have findings such as these for the educational process? Whatever the particular school sees as its role—whether in a more traditional pattern to be concerned with subjects, or in a more progressive pattern to be concerned with the growing student and the society in which he/she lives—then these findings appear to be highly relevant for the educational process within the school. Considering not only the values that have emerged from the survey but the sources of these values, then it would seem that the findings would have implications not only for the teaching of all subjects but also for the guidance programme of the school, for student government, for the work in vocational areas, for the sporting and social programme of the school and particularly for the public relations and family contact policies of the school.

Further if such data were to be gathered, just as examination and subject assessment material is collected, then there could be developed a longitudinal set of data that would not only serve as vital source material for new members of the teaching or administrative staff of the school but also as a means of assessing some of broader aspects of the total educational process within the school.

Results of Questionnaire

Table 1—Opinions Relating to School and Education

Answer	*Form VI*		*Form V*		*Form IV*		*Form III*		*Form II*		*Form I*		*Totals*	
	B	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*
Q. 1A	6	11	6	11	13	15	21	16	21	26	27	38	94	117
1B	—	—	—	—	—	—	—	—	1	1	—	2	1	3
1C	—	—	—	—	4	1	3	2	2	—	5	—	14	3
1D	10	9	10	7	12	19	20	15	16	23	18	21	86	94
Q. 4A	7	10	8	10	15	24	31	24	32	38	28	50	121	156
4B	4	6	4	6	10	10	9	9	5	12	4	11	36	54
4C	5	4	4	2	3	1	3	—	3	—	2	—	20	7
4D	—	—	—	—	1	—	1	—	—	—	15	—	17	0
Q. 7A	4	5	4	7	7	17	12	20	8	22	16	24	51	95
7B	5	1	7	1	18	7	24	4	16	12	10	5	80	30
7C	4	9	5	8	3	8	8	6	15	13	23	26	58	60
7D	3	5	—	2	—	3	—	3	1	3	3	4	7	20
Q.10A	1	3	4	—	3	3	1	3	2	11	6	5	17	25
10B	2	5	4	4	15	15	26	9	29	11	24	26	100	70
10C	5	6	4	10	3	6	4	6	3	17	6	16	25	61
10D	8	6	4	4	8	11	13	15	6	11	14	13	53	60

Table 2—Opinions Relating to Adolescence and its Problems

Answer	*Form VI*		*Form V*		*Form IV*		*Form III*		*Form II*		*Form I*		*Totals*	
	B	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*
Q. 2A	6	6	12	4	23	20	33	18	23	12	35	30	132	90
2B	—	—	—	3	—	1	6	2	4	9	7	3	17	18
2C	5	4	2	7	1	3	4	3	4	9	1	8	17	34
2D	5	10	2	4	6	11	1	10	9	20	7	19	30	74
Q. 5A	1	1	—	—	4	2	3	2	5	2	5	7	18	14
5B	1	—	—	—	—	1	4	3	2	2	1	3	8	9
5C	2	—	2	—	—	1	1	—	3	—	4	—	12	1
5D	12	19	14	18	25	31	36	28	30	46	40	50	157	192
Q. 8A	2	1	2	—	12	10	19	10	8	22	16	15	59	58
8B	3	8	6	10	4	7	4	6	16	6	2	8	35	45
8C	3	7	8	5	1	7	3	5	6	2	3	2	24	28
8D	8	4	2	3	12	11	18	11	10	20	29	35	79	84
Q.11A	1	2	2	2	1	1	4	2	3	8	3	11	14	26
11B	3	11	3	7	4	6	3	4	7	21	6	7	26	56
11C	—	—	2	—	—	1	2	1	1	—	3	1	8	3
11D	12	7	9	9	25	27	35	26	29	21	38	39	148	129
Never	6	14	7	10	6	8	7	10	15	30	6	30	47	102
Some-times	4	4	4	6	13	16	20	16	20	18	37	25	98	85
Regularly	6	1	5	2	10	11	17	7	5	2	7	4	50	27

Table 3—Opinions Relating to Local, National and World Problems

Answer	*Form VI*		*Form V*		*Form IV*		*Form III*		*Form II*		*Form I*		*Totals*	
	B	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*
Q. 3A	1	3	—	3	3	4	4	2	—	2	7	6	15	20
3B	5	12	8	8	11	15	12	15	18	18	15	21	69	89
3C	6	2	6	1	7	7	8	6	5	4	8	5	40	25
3D	4	3	2	6	9	8	20	10	17	26	20	28	72	81
Q. 6A	1	3	5	2	2	6	4	3	2	7	5	7	19	28
6B	7	12	6	9	15	19	24	18	25	30	34	43	111	131
6C	6	4	5	6	10	9	13	10	13	11	8	7	55	47
6D	2	1	—	1	3	1	3	2	—	2	3	3	11	10
Q. 9A	5	4	4	4	2	6	5	2	6	4	7	6	29	26
9B	5	6	8	5	14	7	20	12	13	19	22	17	82	66
9C	6	7	2	9	5	17	17	15	15	18	18	21	63	87
9D	—	2	2	—	8	5	2	4	6	9	3	16	21	36
Q.12A	10	18	11	15	26	29	35	31	31	44	39	42	152	179
12B	4	1	3	1	2	3	4	1	7	6	4	8	24	20
12C	—	—	—	1	—	2	2	1	2	—	3	3	7	7
12D	2	1	2	1	2	1	3	—	—	—	4	6	13	9

Table 4—The Sources of Students' Opinions, ranked according to the number of times chosen

Group	*Form VI*		*Form V*		*Form IV*		*Form III*		*Form II*		*Form I*	
	B	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*	*B*	*G*
Part one—'The School and Education'												
Family	3	2	3	1	3	2	3	2	2	2	1	2
School	2	1	2	2	1	1	1	1	1	1	2	1
Peers	1	3	1	3	2	3	2	3	3	3	3	3
Part two—'Adolescence and its Problems'												
Family	1	1	1	2	1	1	1	1	1	1	1	1
School	3	3	3	3	3	3	3	3	3	3	3	3
Peers	2	2	2	1	2	2	2	2	2	2	2	2
Part three—'Local, National and World Problems'												
Family	1	1	2	1	1	1	1	1	1	1	1	1
School	2	3	1	2	3	2	2	2	2	3	2	2
Peers	3	2	3	3	2	3	3	3	3	2	3	3

QUESTIONNAIRE

WHAT DO YOU THINK?

Here are a number of questions. You are asked to note the answer you think is the most correct from the four (4) given.

You are also asked to note the group—your family, your school or your friends—that has helped you most to reach your answer.

In each case, you are asked to show your answer by drawing a circle round the letter next to the answer you choose. Here is an example:

Do you think this town and district is

A a wonderful place to live?
(B) a fairly good place to live?
C not such a good place to live?
D a terrible place to live?

Which group has helped you most to come to your answer?
(A) family B school C friends

A circle round B in the first part means that you think the town and district is 'a fairly good place to live' and a circle round A in the second part means that your family has helped you come to this conclusion.

You do not have to write your name on the sheets but you are asked to write down if you are a boy or girl and your roll class.

1. What, do you think, it is most important to be in the school?
   A good in your school subjects
   B good at sport
   C popular with students of the opposite sex
   D popular with all students
   Which group has helped you most to come to your answer?
   A family B school C friends

2. At what age, do you think, should young people be given the right to vote?
   A 18 years
   B 19 years
   C 20 years
   D 21 years
   Which group has helped you most to come to your answer?
   A family B school C friends

3. How can we cut down on the road toll and reduce the number of people being killed and injured? Which answer, do you think, is the best?
   A Having more police traffic patrols
   B Giving harsher penalties for those who break the road laws
   C Making the roads better
   D Making the cars safer
   Which group has helped you most to come to your answer?
   A family B school C friends

4. In your work at school, what is the most important?
   A To do your best all the time
   B To try hard most of the time
   C To do just enough to pass
   D To do as little as possible
   Which group has helped you most to come to your answer?
   A family B school C friends

5. When you are choosing a job or career, what will be the most important?
   A A good salary (or good wages)
   B Good working conditions
   C Chances for promotion
   D That the work will interest you
   Which group has helped you most to come to your answer?
   A family B school C friends

6. Which of the following problems, do you think, is the most important for Australia?

A To build up our agriculture
B To stop pollution
C To halt inflation
D To increase the population

Which group has helped you most to come to your answer?
A family B school C friends

7. Which would you most like to be in the school?

A Captain of the School
B Senior Athletic Champion
C Dux of the School
D Champion Debater

Which group has helped you most to come to your answer?
A family B school C friends

8. There are many opinions about growing up and being a teenager today. Which one of these four, do you think, is the most correct?

A It is easier to be a teenager today than in the past
B It is harder to be a teenager today than in the past
C It is much the same being a teenager today as in the past
D It is not possible to tell whether it is easier or harder

Which group has helped you most to come to your answer?
A family B school C friends

9. Which one, of these four problems, is the greatest facing the world?

A The problem of colour and the conflict between races
B The problem of peace and the fear of war
C The problem of hunger and too many people in the world
D The problem of communism and its threat

Which group has helped you most to come to your answer?
A family B school C friends

10. What, do you think, is the most important job of the school?

A To prepare you for study after school (at University or College)
B To help you to get a good job
C To help you become a good citizen
D To help you learn to get along with people

Which group has helped you most to come to your answer?
A family B school C friends

11. What do you think? Teenagers at school . . .

A Should never be allowed to smoke
B Should be discouraged from smoking
C Should be allowed to smoke sometimes
D Should be allowed to make up their own minds about smoking

Which group has helped you most to come to your answer?
A family B school C friends

Do you smoke?
A never B sometimes C regularly

12. Which one of these answers, do you think, is right?

A The world can be made a better place to live in and we can all play a part in making it better
B We should try to make the world a better place to live in but there is not much hope
C We should leave it to others to try to make the world a better place to live in
D Only the people with money and power can make the world a better place to live in

Which group has helped you most to come to your answer?
A family B school C friends

Are you a BOY OR GIRL? .....

And your ROLL CLASS? .....

ROLES OF TEACHERS IN INQUIRY CLASSES

DR. W. A. F. LANG

Introduction

This paper is about *roles of teachers* in *inquiry classes*. It will explain what I mean by an ASEP inquiry class and will then illustrate various teacher roles as observed by ASEP teams during trials.

Although these observations may appear to be valid only for science courses, inferences made hold for any subject based on a similar philosophy, i.e. a belief in an inquiry approach, especially if it is experience-centred, problem-oriented and interdisciplinary.

In an inquiry approach the student is supposed to be actively involved in learning, seeking answers to questions really posed by himself, using appropriate procedures.

INQUIRY THE ASEP WAY

In ASEP materials the extent to which discovery-inquiry is guided and findings are predetermined depends partly on the level at which the child is operating and partly on the objectives of a particular activity. Sometimes directed inquiry is used to help students to find an answer. Sometimes they are simply given information or are referred to other sources.

It is expected that some teachers may decide to dispense with all materials in favour of open inquiry which gives greater scope to the affective aspects of learning. Usually, there will be a mixture of both directed and open inquiry involving experiences which serve both affective and cognitive goals.

STRUCTURE OF ASEP MATERIALS

It is necessary for the understanding of the following to give a brief description of the structure of ASEP materials.

There is no one course of study but an assembly of 40 individual units. In most of these units there is a core which supplies the skills, both intellectual and manipulative, which are required for the study of a topic. All students need to do the core if they are to attempt any of the options.

The core is followed by a series of options from which students can choose. ASEP materials cater for individual differences in two ways—they are self-pacing and by offering options they allow for the expression of preferences. The options contain open-ended suggestions and encouragement to go off in any desired direction.

THE MANY ROLES OF TEACHERS

Inquiry teaching demands great versatility; only occasionally can the teacher be the expositor of old. He has to be motivator, encourager, provider of equipment and materials, controller and guide, initiator of dialogues and

group discussions. He will have to be evaluator and yet stay a group member. There will be problems in changing roles.

The motivator

In using ASEP materials the teacher has an important role in arousing interest and, if possible, excitement so that children want to learn more, and, eventually, to plan and conduct their own investigations.

The teacher is obviously more skilled than the student in converting prepared materials into suitable learning experiences and can use his own methods where recommended procedures are either not appropriate for a particular situation or a particular student.

The encourager and involver

Many students in Australian schools are not used to an open and less restricted approach and if there are no clear cut ground rules chaos can easily result. Putting materials into the hands of students does not necessarily ensure that they will be used—there will always be individuals or whole groups who will do nothing but look out of the window, day-dream or play around and upset others who want to get on with work in which they are interested.

We have seen teachers who involved students by asking for their assistance, such as with some problem of distribution.

Very often non-participation is due to lack of understanding and a reluctance to ask what to do, e.g. in a group where a frame was to be constructed to investigate the surface tension of a soap film one boy appeared completely disinterested. However, it turned out that he was a poor reader and did not comprehend what he was supposed to do. Once he was asked to help with making a frame he did so, even suggesting improvements. Delighted with his success he demonstrated to a large group who in turn shared his new-found enthusiasm.

The provider of materials and equipment

In the science class a particular problem faces the teacher who wants to cater for individual preferences—provision for resource materials, equipment and supplies of chemicals. The teacher has to work out beforehand all that will be required and should have a petty cash allowance to draw upon for inexpensive items that are needed on short notice.

There is nothing more frustrating for children than to have to hang around and wait when they are eager to get started. Many teachers do not allow students to go to storerooms and gather their own supplies. In such cases it is essential that storage space and shelves are provided in each room. Trolleys which can be wheeled from room to room provide an alternative, though less satisfactory solution. Many teachers appoint student assistants to help maintain accurate inventories, prepare solutions and distribute materials.

The controller and guide

Teachers of ASEP materials must see themselves as members of classroom groups in which interaction between group members affects individuals.

The teacher affects and is affected by all members of all 'his' groups. He has to make decisions about the classroom climate he wants and looks for means to foster interdependence (assuming this to be desirable for social development).

By the way, we observed that in many so-called co-educational schools there is a strict separation of the sexes which is apparently self imposed. No 'mixed' groups elected to work together and neither boys nor girls asked for each other's help. Shouldn't teachers watch for this situation and try to remedy it?

Many teachers misinterpret their role in such a learning environment, as they see themselves only as managers of time, space and material and not as guides and advisers.

Some teachers treat an ASEP learning situation as if no guidance needs to be given at all. One could imagine what would happen to an archaeological site if students were told: 'Here it is' and no tools were supplied, or at best, a teaspoon.

It has been suggested that students should be encouraged to conduct their own investigations and follow their interests. We have found many who needed guidance and were grateful for suggestions from the teacher. It has been put to teachers that diversity rather than conformity should be the aim.

The teacher and the materials have different roles in the learning situation. The materials should not be seen to inhibit the continuous and frequent interaction between learners and their teachers in their daily activities.

What the materials can and should do is to free the teacher from the burden of instructing so that he can attend individuals or groups and engage in meaningful dialogue.

The initiator of dialogue

The dialogue may be largely *explicative* where the student is not asked to discover or invent something.

The main purpose of such a dialogue is the laying of foundations by giving information and explanations, it can take place with any number of students and one or the other could well be encouraged to take over.

The time for this could be

(a) After everybody has reached the same point in a structured learning sequence, probably best as discussion of a diagnostic test. In this situation the teacher performs frequently as expositor.

(b) When it is apparent that a group is 'lost'. This may well involve initially only one or two students and does frequently lead to many more drifting towards the group.

(c) It may well be that group is more advanced than the rest and can comprehend and enjoy explanations and theories. The teacher can

decide whether to supply information or refer the group to resource materials.

The teacher, often prompted by the instructional materials, may have a definite outcome in mind. He starts a formative dialogue and structures it in such a way that the student is likely to 'discover' the relationship or generalization which it is intended he should discover.

There are dangers in this method. The teacher knows his destination—the student does not, and may be interested in an issue which will never lead to the desired outcome. What does the teacher do? Surely if the teacher is not prepared to allow sidetracking which displays a genuine interest it would be better not to start the dialogue at all and resume the role of expositor.

> 'It would seem unfair and misleading to set students upon a voyage of discovery and then pronounce only the discovery of America acceptable.'[1]

A more productive form of formative dialogue will result when the teacher has a direction in mind but not a specific outcome, yet he hopes that the student will arrive at some set of valid outcomes which are clear to himself. These may well differ from those the teacher had in mind originally.

This may well culminate in the teacher helping students to clarify procedures which are potentially useful for reaching objectives which the student has set for himself. He is ready to help and guide when asked to do so, but does not interfere in the student's activities as long as they are purposeful.

Limiting the individual's interests is probably the strongest argument against the exclusive use of printed materials as their writer cannot foresee all possible directions in which a student may want to explore.

The teacher may start an exploratory dialogue where neither the teacher nor the students know the direction or the outcome of the dialogue. This requires not only a high degree of rapport but also a facility to talk which is frequently absent in students and teachers and mars the setting up of discussion groups. Teachers are often afraid of 'getting off the point' and grasp every opportunity to direct the dialogue towards a definite objective thus getting back towards a formative dialogue.

Group discussions can grow out of discussion starting dialogue with the teacher fading out after a face-to-face relationship between students has become established. If the teacher can accept outcomes other than the ones he prefers, valuable exploration is possible and new and unexpected ideas can emerge.

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[1]N. L. Noddings: Identifying the purposes of rational dialogue with high school Students. *The Science Teacher* September 1971.

The only criterion for acceptance need be that any decision is well informed. The students need to feel that they are 'getting somewhere' and that their activities serve a purpose.

We have found that it is as difficult to induce students to give verbal reports as it is to get some of them to participate in discussions even on topics such as housing, traffic, solar energy, the part that science plays in adding to our comfort and pollution problems created by people in their misuse of science.

The Evaluator

Formative and exploratory dialogue, rather than any paper or pencil tests, show the extent of formation of desirable attitudes.

Furthermore, the questions which students ask give more information about the level at which they operate than the answers given to teacher's questions. Children are very quick to react to involuntary cues as to expected answers. Experienced teachers avoid providing 'answers' that the students are capable of finding for themselves.

Students generally enjoy 'the practical work' involved in an 'investigation' but try to avoid having to process data or to make appropriate generalizations from their data. Many are quite unable to integrate these generalizations into their existing conceptual framework without considerable assistance. Active participation and having fun is no assurance that the desired learning is in fact taking place.

Diagnostic tests and discussions of the answers provide teachers with much information on student progress.

ASEP student books contain the answers to questions asked and in case of multiple choice questions, explanations of why certain distractors are not the best answers to the questions asked.

It is very difficult to overcome barriers which previous experience has erected in the minds of young people. In their opinion, the teacher is the one who is to provide the 'judgement'. To assess themselves and do so honestly is regarded by the students as almost impossible and the visitors to classrooms are frequently told: 'You have no idea how they cheat'. This self-assessment is a first step towards genuine learning and independence. Probably it is psychologically naive to assume ideal behaviour when the 'Geltungstrieb' (Adler) provides such powerful 'anti-motivation'.

We have built into some of the materials tests which require the student to do something, e.g. make a simple cardboard telescope and to assess himself. If, however, no ranking scheme is suggested there is disappointment. It is unfortunate that many youngsters do not feel gratification at having carried out a task.

We have found that students tend to criticize materials 'I don't know anything I did not know before' or 'I did not learn anything'. These are serious accusations, even though a closer look often reveals that, though no

new facts can be reproduced or knowledge displayed, many changes in skills and attitudes have taken place. Maybe this is a case of 'painless' learning.

Results of 'pre and post' tests and diagnostic tests have been used by ASEP to serve as indicators of the effectiveness of the instructional trials materials and have been used as a basis for changes to be made.

Many teachers have used these tests to find out areas of student strengths and weaknesses on the performance of particular tasks and have provided remedial tasks.

Evaluation must be helpful to students and teachers—it must lead to further learning, whether that learning be social, emotional or cognitive (Flanders).

It must also provide the Project with information that leads to decisions for changes to improve the materials.

The team member

We did not observe any team-teaching though many units could be taught that way. 'The Human Machine', for example, could be presented by a physicist, a biologist and a physical education teacher. One experience (in the laboratory) tends to stimulate another and may suggest correlation with mathematics, social studies and other subject areas.

Ideally, at least three people should be in the room—one with a sound background in the physical sciences, another in the life sciences and at least one laboratory technician who can see to the supply and maintenance of equipment.

Difficulties in changing roles

Classroom trials showed that the expected teacher roles were unfamiliar to many teachers and therefore imposed a considerable strain on teachers who have been accustomed to other roles, particularly that of the expositor. This radical change in approach requires that the teacher has a genuine desire for a change and recognition that such a change brings improvement in student learning. Reluctance to change is increased by the fact that such a change will at first bring a greater workload and require extra effort. Unless teachers find the objectives of new materials acceptable they are not ready to give their support to their introduction.

SUMMING UP

The roles adopted by successful ASEP teachers

The teachers whose students expressed the greater satisfaction were able to keep their classes informal, relevant and, at the same time, intellectually demanding. Teachers who have a good academic background are at an advantage as they can be of immediate help. However, we have seen many good teachers who had the confidence to admit ignorance and encourage students to find answers and convey them to others.

In classrooms run along lines recommended by ASEP, students and teachers came to know each other better and teachers were able to diagnose

and remedy difficulties much more effectively than in the more conventional set-up.

Teachers did not regard themselves merely as servicers of printed materials and saw as one of their roles the encouragement of active unrestricted inquiry, at first as an extension of printed materials, but later free from any limitations.

We have tried to supply materials which will leave schools, teachers and students free to choose what interests them most, but we were also conscious of the need to provide worthwhile activities which will counteract 'intellectual flabbiness' (John Dewey) and help our youngsters to develop to the fullest extent.

The success of this, as of most other programs, depends to a large extent on the teacher who motivates, guides, supplies supplements and acts as a sounding board of ideas.

Innovations such as inquiry teaching require, at least initially, far more effort than the familiar expository mode of teaching. We found that the teachers most willing to spend time and energy were the ones who participated in the development of materials. It appears that the strongest motivation for a teacher is 'doing his own thing'.

TEACHING MODERN LANGUAGES IN SECONDARY SCHOOLS

Z. VOLEK

A reasonable, or even a partial knowledge of one or more foreign languages is an experience not to be compared with any other experience. It comes, as a rule, slowly and gradually, it is the result of one's effort and patient work perhaps over many years and often it is a never ending effort. Yet when acquired, at least to some degree, it opens a new world, it makes it possible for you to talk to a foreigner or to read a foreign newspaper or a book. And with this ability to communicate or to understand comes a little insight into the life and culture of the people using this language. And in this way a knowledge of another language or languages enriches one's life; and if there were no other reason for learning languages this one alone would be good and powerful enough.

It would be incomplete to talk about teaching of foreign languages in secondary schools in isolation; in a number of countries this experience starts for the child well before he or she reaches the secondary school and many students do not close this chapter after one, three or five years but continue, and having reached such stage this process hardly ever ends. In Australia, however, the secondary school level is the most important situation in foreign language teaching because it is here that most students have and use the opportunity to learn at least some rudiments of a foreign language.

Over the past few years it has been shown that, in Australia, the teaching of foreign languages in secondary schools has declined in proportion to the increasing number of students. A number of articles and papers has dealt with this aspect; E. K. Horwood, in his article in 'Babel' in October last year, has provided some interesting figures and examined some reasons for this decline and concluded by saying that:

> 'In general the language-literature subjects appear to be losing ground'.[1]

We can obtain some consolation if we look to the other end of the scale—the number of adult students. A decade or so ago there was very little teaching of foreign languages to adults taking place apart from the universities and such specialised schools as, e.g. the R.A.A.F. School of Languages at Point Cook. Since then we have seen an increasing number of crash courses of modern languages for business men, tourists and the like, and the language classes in the various Institutes of Modern Languages are growing steadily.

So with the possibility of modern language teaching extending in future to primary schools, and with the adult population becoming increasingly

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[1]E. R. Horwood, Language Dropouts: Pointing some problems; in *Babel*, October, 1972. Vol. 8, No. 3, pp. 11-17.

aware of the usefulness of at least some knowledge of some foreign language. I see some better times ahead for the teachers of modern languages. With this in mind I want to have a closer look at the secondary school situation today.

Let me look at two things first: what are we going to impart and how are we going about it; the skills and the methods.

Skills

Traditionally, the four skills have been accepted as being fundamental in learning a foreign language: understanding and listening, speaking, reading and writing. What has varied—particularly in the historical perspective—has been the emphasis on each of these skills, the order in which they were arranged for learning. Very often some kind of balance between them has been aimed at and achieved, but what is balance and what is imbalance and how do you measure them?

At least since World War II—and in other parts of the world considerably earlier—the tendency has been to arrange the order of skills in the same way as I have just mentioned them: understanding, speaking, reading and writing. Language is a means of communication, a living thing; the spoken word is an expression of a higher rank than the written word. It alone has rhythm, stress and intonation which the written word does not convey. This is why a live dramatic performance offers a greater range of satisfaction than simply reading the script.

There is no denying these facts. And so, to teach these skills in the desired order the audio-lingual method(s) provided an almost perfect means. We had the skills in the right order, there was a method (in a number of variations) which satisfied the requirements of this right order, and we seem to have come out with a solution where everything fitted nicely together and everybody was happy.

Not for too long, though. And amongst those who had good reasons not to be entirely happy was one important factor in the teaching and learning process—the student.

To return to the four skills. Listening and speaking are the two skills on top of the hierarchy. Yet of what use are they to a student who drops the foreign language after two or three or four years? In this environment, is he more likely to come across somebody who not only speaks that particular language but who will actually speak to him in Japanese, French or German, or are the chances greater that he will one day pick up a foreign language magazine, newspaper or a book? Is it more probable that he will visit Indonesia or Italy one day or is it more likely that he will, perhaps as a student of biology, engineering or physics one day want to know what is in that article in the Russian or German professional journal?

And even if he does go to Indonesia or Italy, he will—in whatever time he has there and depending on his linguistic ability—pick up the listening and speaking skills regardless because he will be exposed to them for so many hours each day.

The awareness that the over-stress of one or two skills to the detriment of the others, and, similarly, the vacuum in some fields left by the audio-lingual or audio-visual teaching method, is not new. For example, some of the papers at the Tenth Congress of the Federation Internationale des Professeurs de Langues Vivantes in Zagreb in 1968 pointed in this direction. In his introduction to and summary of section 4 of the Congress, R. Filipovic says:

> 'It was pointed out that the present-day stress on oralism, pattern drills and laboratory work might lead to a neglect of a very important foreign language teaching aid: literature, and that teachers are trained in all kinds of language techniques but get almost no training in how to discuss works of literature in such a way as to bring out their literary value and give students an opportunity to react as individuals to the material they are studying'.[2]

He then lists three ways in which literary texts can be used in teaching a foreign language:

(1) to give instances of the use of grammar,
(2) to increase students' vocabulary, and
(3) to illustrate this highly expressive use of language in special kind of communication.

In Australia, it may not be so much literature which is neglected, but the over-stress on oralism is present, nevertheless.

To get the hierarchy of skills into perspective: I am not suggesting that we should do even as much as rearrange the order of their importance in our conventional secondary school teaching situation. I have no desire to see another Latin being artificially created from some living language. On the other hand I think that the predominance of listening and speaking has gone too far when you argue—as one American author does—that amongst reasons for this predominance is the fact that spoken language has existed for over a million years whereas written symbols have only been used for some six or eight thousand years!

In short, I believe that the balance between the four skills lies somewhere near the point of equality, and this is so for two main reasons: by stressing listening and speaking at the expense of reading and writing, even if only in the relatively early stages of learning, the teacher deprives himself of an opportunity to explore two important aspects in the field of language learning and teaching. Secondly, this is even less justified when we consider that amongst those students who begin the study of a foreign language at a secondary school, the majority of those who will have an opportunity for some practical use of it will encounter it in its written rather than spoken form.

Methods

The numerous learning theories which have been developed during the last hundred years or so, have each contributed something to the teaching

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[2]R. Filipovic (ed.), *Active Methods and Modern Aids in the Teaching of Foreign Languages*, London, Oxford University Press, 1972.

methods in general and to the teaching of modern languages in particular. They have influenced the historical development of teaching of modern languages and it is justifiable at this point to spend a little time in reviewing briefly the main stepping stones in this process. I have based this review on Harding's summary in his book 'The New Pattern of Language Teaching'.[3] From the Grammar-translation method, fully understandable in the days of Latin which every educated person in Europe mastered in writing and reading but which all of them pronounced differently, through the Direct Method, the 'Compromise Method' was finally arrived at in the post-World War I years in Europe. Then the oral method captured the imagination of language teachers, the Linguaphon publishers captured the market and the Linguaphone records became a 'must' for anybody learning a foreign language, including students in schools. Furthermore, in schools, as Harding says:

> 'Pupil correspondence with foreign pupils, exchange visits and school journeys abroad developed considerably . . .'

which was not really a bad stage of development. However, Harding points out that a gradual lapse into the grammar-translation method followed.

The outbreak and particularly the duration of World War II led in the U.S.A. to a sudden demand for staff competent in foreign languages. Such establishments as the Army Specialised Training Programme pioneered the modern A/L methods and, as Harding says:

> '. . . the stimulus to school language teaching was a wholesome one, and ultimately some real progress was made. Language laboratories and A/L courses came to be accepted as essential to language teaching in schools . . .'

Harding's historical review is perhaps oversimplified even in its full version but it is basically true even if the development cannot be cut into any convenient sections or compartments and the usage of various methods overlaps in time and in different parts of the world and different teaching situations. Two points, however, are worth noticing: Firstly, although the grammar-translation method is almost an antithesis to the A/L method there are not many in-between steps which seems to indicate that the ways in which one can teach—and learn—a foreign language are rather restricted and application and hard work seem to be the main essential of all of them. Second point is that, due perhaps partly to over-simplification, methods are being listed and compared which were used under different circumstances.

Furthermore, the choice of methods did not seem to have made much difference to the standard and language proficiency achieved, regardless of the level at which they were used. Even today, in spite of the fact that the application of the Direct Method might seem rather time-wasting at times, few teachers would probably object to having in front of a class of secondary students a native French, Japanese or Russian teacher in place of a young graduate who combines a mediocre oral command of the language with

[3] D. H. Harding, *The New Pattern of Language Teaching*, Longmans, London, 1967, ch. 1.

much less than a thorough knowledge of its grammar and who, in order to survive, has to rely heavily on a narrow, thin strip of cellulose tape.

So the first point is that no method can claim a complete independence of other methods, and no method has ever been and will ever be THE ultimate answer in foreign language teaching. And as for the 'new' and the 'old'—it has been long recognised that Comenius would have a fairly justifiable claim to any audio-visual method of teaching.

The basic assumptions and principles underlying the A/L methods as well as the claims they make are available to every modern textbook dealing with modern language teaching. Some of those, which are relevant to the context of this paper, are:

—listening and speaking skills are developed first through pattern drills;
—these drills are based on a series of situations, and in this way situations act as stimuli which promote learning;
—learning of structured patterns is based on the theory of habit formation and behaviourist psychology;
—they claim to teach the language rather than about the language.

Objections to A/L methods have also been listed and substantiated more than once and without listing them again, here are some of those that I shall be looking at:

—pattern drilling becomes tiring, boring and eventually meaningless;
—absence of word-to-word relationship which prevents students using familiar expressions in unfamiliar patterns;
—the incidental approach to grammar which does not provide a frame of reference; and there are other weaknesses as well.

The A/L method is probably one of the most successful attempts to recreate artificially conditions under which the student would learn if he found himself in a foreign country. To achieve this effect it brings the voice of the native speaker into the classroom and often requires the student from the start to follow his utterances at normal conversational speed. However, it does not seem to take sufficient notice of the important differences which exist between the classroom and the natural foreign environment, such as the length of time and the frequency of exposure. Above all, there is the artificiality of the environment which is accentuated by the unsuitability of commercial courses available in Australia, in particular of those intended for use in language laboratories or with a tape recorder. To prepare his own programme is a mammoth task well beyond the time and resources available to a high school teacher and, as a result, he has to submit his own views and his teaching ability and technique largely to the programme which he is using.

Many proponents of the A/L theories blame a priori the incompetence of teachers for failure of this teaching method in a practical classroom or Language laboratory situation; no doubt there may be some truth in it but having seen instances of failure of teachers who had a thorough training in no other but the A/L method, I find this blanket, a priori condemnation of teachers rather unfair. It seems to me to be the easy way out. The simple

fact is that either of them or both of them, the method and the teacher, may be at fault. Often, too, it is not so much a fault of the method but rather of a particular textbook or its authors who go too far to bring what they consider to be the spoken, colloquial language to the classroom, and shocked by the mere sound of the word 'translation', go to the other extreme in attempting to convey 'meaning'. Let me give you an example of how far things can be taken to confuse the student. One textbook of German for beginners has a paragraph in German on one page and the presumably equivalent paragraph in English on the previous page. The English text is headed: 'At the Supper Table'. The German text reads: 'Die Familie sitzt am Tisch'. The students come to you asking whether the familiar word in German means the same as in English—and if it does, why doesn't it say so? They come equipped with a dictionary ready—and quite able—to convince you that the German does not mean the same as the English text. And so on. What are you to do? Are you to follow the advice of another A/L textbook (this time a French one) which, in its Teacher's edition tells you under a lesson this: 'Reassure the students that they will never be asked to give you the exact English meaning of individual words in the sentences they practise . . .'.

I realise that you cannot blame the method for this sort of thing; the fact remains that such approach is wrong in principle as well as psychologically unsound; instead of satisfying the student's healthy, natural curiosity you are to give him an answer which, in his mind, puts your entire teaching in doubt. Furthermore, the drill and the restricted situational pattern leave the student ignorant of the vast potential of the language which you are trying to teach him.

Much as I agree that it is sound to teach and to drill some patterns I see no harm in learning vocabulary as such, even in the early stages of foreign language teaching, as long as your ultimate objective, never to be forgotten, is to teach the student not only to speak but above all to *think* in the foreign language. This is the essential requirement which underlies everything you need in a foreign language—the four skills and all. It is quite reasonable to expect some positive results in this direction after, say, an intensive 30 weeks course; you get some of it even after an intensive but much shorter crash course of two or three weeks; but it is hard, very hard, to instil this essential requirement into a high school student who may study the language for five years but whom you see in the classroom three or four times per week.

Like teaching vocabulary, I see no reason why formal grammar and a gradual introduction of grammatical rules should be discarded during any stage of language learning. It goes without saying that this grammar and these rules must be carefully selected and relevant to what the student is learning. I do not hesitate to introduce grammar both inductively as well as deductively, from the particular to the general and from the general to the particular, as the occasion demands. This is what flexibility means, this is what helps to prevent boredom in a classroom: to obtain the best—within a programmed and prepared term of reference—from a given teaching situation. And the teaching situation is never the same as before. In teaching

grammar, this, admittedly, may be only my own interpretation of what Chomsky calls 'internalizing systematic grammar' but I have found over and over again that it works.

Nature of a language

I have already stressed the need to guide the student so that he eventually thinks in the other language. The reason for it is obvious: each language has its own pattern, its own systems and the student has to assimilate them. Without going into linguistics theoretically, let's have a look at one or two practical teaching situations as they may develop. Look at the English sentence: 'The dog gives the boy the ball'. In the language which is uninflected except for plurals, it is so easy for, say, a New Australian, to reshuffle the nouns and come up with something like this: 'The ball gives the dog the boy'. This stage in language teaching may come quite early and if this kind of phrase or sentence comes up I would feel that I was missing a valuable opportunity if I did not explain to the students that, unlike in English, in other languages such as German, Russian and also largely in French, the noun changes or its gender changes or that both change, and that this depends on its position and function in the sentence or phrase. And whereas it may require some effort to learn cases for example in German, this is how they come into the picture, and it makes the language in the end easier to follow. To explore differences in languages may be just as useful and interesting as it is to explore similarities.

Let us look at one other example, this time on pronouns. No amount of drill will make it 'easy' for students to learn German personal pronouns because they can be used in such a large number of situations. They cannot be learned like vocabulary because the English 'YOU' can be expressed in a number of German words.

Table No. 1 (based on Taeni and Clyne)

GERMAN PRONOUNS

Sing.	1st	2nd	3rd			
			Masc.	Fem.	Neuter	
NOM.	ich	*du	er	sie	es	
ACC.	mich	*dich	ihn	sie	es	
DAT.	mir	*dir	ihm	ihr	ihm	
GEN.	meiner	*deiner	seiner	ihrer	seiner	
Plur.						Sing. & Plur.
NOM.	wir	*ihr		sie		*Sie
ACC.	uns	*euch		sie		*Sie
DAT.	uns	*euch		ihnen		*Ihnen
GEN.	unser	*euer		ihrer		*Ihrer

*'you' in English.

When presented with a relatively simple table like this, however, the students grasp the reasons why 'YOU' has a variety of meanings in German and after that the drill becomes much more meaningful and reinforcement much faster and more successful.[4]

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[4]This table is based on R. Taeni and M. G. Clyne, *Efficient German*, Macmillan, Melbourne, 1965.

Since I have mentioned Russian, it is interesting to note that one of the main lectures at the Tenth Congress in Zagreb which I have already mentioned, was given by E. M. Stepanova on the topic: The Role of Grammar at the Initial Stage of Teaching.[5] In the work which I have already quoted Filipovic lists seven main points of her paper at some length; among them are:

—it is indispensable to give a description of the fundamental content of the grammatical system in Russian, and to define its active and peripheral part;

—a description of the grammatical system, whose object it is to teach the language as a foreign language, cannot be accomplished without a study of the lexical material which fills its structures.

Language Laboratories in Secondary Schools

It has become a matter of prestige, of status symbol, to have a Language laboratory in a school and I want to spend a little time now dealing with the role of the Language laboratory in a secondary school.

From the outset, we must consider three points: what kind of LL is it, how is it going to be used and who is going to use it?

Perhaps not always, but very often the dearest is the best. This applies in full to the LL's. The quality of reproduction is of the greatest importance in foreign language teaching and no cheap, and probably only a very few medium-priced tape recorders would do the job which is expected from it in a LL. Since we aim at individualizing instruction in LL, it is important that each student has a tape recorder in front of him with his own programme, or able to record his own programme from the master tape, a facility to record the student's voice, and finally the facility to replay any part of everything that has been recorded as many times as necessary. Only in this way can we achieve fully individualized instruction which enables the student to proceed at his own rate, presumably within the limits set by his teacher. This kind of LL is, of course, the most expensive type. At the other end of the range of LL's there are arrangements, also glorified by the name of LL mainly because, I suspect, the students have earphones on their ears, which amounts to very little or no more than a tape recorder in a classroom.

Whichever kind it is, a LL is only a rather expensive set of sophisticated machinery, an aid to teaching, and its effectiveness will depend on how it is used. Here we come back to the type of programmed material which is fed through it to the student and, secondly, to the frequency and length of time for which each student will be able to use it.

I have already said that there is hardly a commercial course available in Australia which could be called satisfactory, so in effect a teacher who is using a commercial A/L course in a LL is supplied with so much expensive material—textbooks, tapes, plus the equipment of the LL, not mentioning

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[5]Filipovic, *op. cit.*, p. iv.

slides, projectors and other trimmings which may go with it—that, in order to 'get through' the course and to provide adequate drilling and repetition experience, and allowing for the necessary preparation of the material before the use of it in the LL, the teacher is virtually phased out of his role as a teacher, who from the outset had his own ideas about topics, material and the manner in which they should be treated. A moment ago I said 'adequate drilling' but of course what is adequate for one student is more than adequate for another one and less than adequate for a third one. And unless you have the most expensive type of LL the students have no option but to follow one master tape. Of course, you can use two or more master tapes at the same time; my answer to it is simply: try it!

As regards the frequency of usage and the length of time spent by each student in the laboratory I believe that any school which is big enough to afford a LL is too big to be able to use it effectively. To put a class of 30 or 35 in a LL once or at the most twice per week is completely inadequate. Furthermore, the LL should reinforce classroom instruction so that the student is thoroughly familiar with everything he practises there; for that reason such practice should follow immediately the classroom instruction.

One further point I would like to touch upon here. It is a view of the suitability of the A/L method with particular relevance to its use in the LL, which was put to me recently very succinctly by Wing Commander S. B. Lang, C/O of the Point Cook R.A.A.F. School of Languages. He said:

> 'We use audio-lingual methods, but the method can have relevance only where the situation is developed in a meaningful way and the patterns and vocabulary have a direct connection in the student's mind with the base upon which they have been developed. In a context where there are breaks for other subjects, and the situation must be redeveloped with each exposure to the language, the audio-lingual method tends to break down'.

The third poin: I made about the LL was: 'Who is going to use it?' In the secondary school it is going to be used by adolescents. I have referred earlier to the high rate of drop-outs from foreign languages at the secondary school level and the relatively low percentage of those who eventually matriculate in the foreign language. In these circumstances it would be unrealistic to assume a generally high degree of motivation; it is not to be compared with the degree of motivation of, say, a group of business men who paid a relatively high fee for a crash course of two or four weeks in Japanese because they are going for a trip to Japan. Indeed when you compare these two groups—a class of 30 14-year-old students in a secondary school, and a group of business men going for a business trip (or for that matter a group of public servants assigned to work for some years to come in a foreign country)—you get in a nutshell the reasons why, in the case of business men, the A/L method and the use of the laboratory produces far better results than in an average class of secondary school students.

Contributing factors are the facts that the instructor in the class of business men probably either co-operated in producing the course or at least had enough time to modify parts of it to suit his own individual

teaching methods and that he has been properly trained in using the laboratory.

For the group of business men you could substitute a group of recently arrived migrants: the differences between the first and second group would account for the difference in result.

For comparison, here are some of the differences which account for an efficient or not-so-efficient usage of languages.

Table No. 2

EXAMPLE OF TEACHING SITUATIONS IN A L.L.

	(a) Group of businessmen (or migrants)	(b) Class of secondary school students
Usage:	High intensity	Low intensity
	High frequency	Low frequency
Time:	2-4 hours *daily* (or more)	1-3 periods (30-50 min.) *per week*
Motivation:	High	Variable?
	L.L. practice *immediately* after class lesson	?
	F.L. the *only* subject	F.L. one of 5-8 subjects

When you sum up these arguments, take into account the high cost of installation, operation and maintenance of language laboratories, and—for a number of reasons—their low efficiency in secondary schools, I cannot but conclude by saying that in general, under present conditions, language laboratories in secondary schools are a very expensive luxury. There is a very pressing need for a systematic research in this field and a detailed examination of the efficiency of language laboratories in secondary schools before more money is channelled into them.

Other points

If we look at any teaching situation in any subject, few people would deny the fact that the most important single factor in teaching is the teacher, his competency and his skill in using the method and aids which he has selected or which are at his disposal. The effect of the method and the aids are contributing factors; some of you would consider their importance to be marginal, or a little more or a good deal more than just that.

However, there are other factors which—although some might consider them not directly related to classroom teaching—are nevertheless important for teaching of foreign languages, for the teacher and the student alike.

There is a seemingly incompatible gap between the language teacher and the teachers of other subjects. In History, Geography, English, Science and other subjects Team teaching is becoming part and parcel of the accepted teaching method. The Art teacher or the Science teacher encourages his students to move around in the classroom, to experiment, to learn by doing. For these reasons the architects and builders and planners have changed and in some respects modernised the traditional classroom or the block of classrooms. We are now beginning to find more and more frequently folding partitions between rooms or even large halls divided by low partitions or simply by furniture which can be moved to adjust for the required number of students. The normal, self-contained classroom seems to be on its way out.

At the same time, more and more sound producing equipment is being used: tape recorders, television, radio broadcasts, record players, etc. Whereas it simply means that most students and teachers have to put up sometime with an increased level of noise which is not of their own making, the fact is that this is an unacceptable situation for teaching of foreign languages. The foreign language teacher must make it quite clear now, before it is too late, to those who are planning and building schools for the future, that his requirements are on the other end of the scale: he and his students need a quiet, noise-free environment, as soundproof as possible, in which, of course, they can make as much noise as they like; the noise of the right kind of course. Such is the only environment in which the student can hope to successfully learn new sounds. In a school which caters for a thousand or more students it should not present an insurmountable or excessively costly problem to provide a block of reasonably soundproof classrooms, tucked somewhere in a little corner of its own, away from the oval, the basketball fields and the swimming pool, with provisions to accommodate the hardware which the foreign language teacher uses these days.

The time-tabling is changing, too. The eight periods a day or the six periods a day will give way to a more flexible scheduling. If the foreign language teacher has 150 or 170 or so minutes for each of his classes per week, five 30-minute modules are of considerably more benefit to his students than three 50-minute periods. There will be always exceptions to this and it may vary according to the level but in principle, a smaller amount every day amounts in language teaching to a great deal more than three long periods per week. Flexibility, adjustable from grade to grade and according to individual requirements, rather than rigidity is what is required.

It is likely that students will spend more and more of their time at school in private study. This, of course, is nothing new. What is new is the provisions which will have to be made for it. In the past or at present students spend their time of private study, under supervision or without it, in a classroom, in the library or, sometimes, anywhere they can find a quiet spot. This will not do in future, certainly not for the foreign language student. The schools will have to provide in the language block one or more resource centres which would incorporate not only individual facilities for use of audio-lingual and audio-visual material but also a tape and cassette library from which the student could borrow material to take home—if need be with a good cassette player.

I would hope to see in not too distant future the exploration of the possibilities, suggested by the Leeds and other experiments little more than a decade ago, in some Australian schools. Ten-year-olds were subjected to an intensive course of French and later they were taught some of the general subjects like geography or history in French. This is the time and place for use of some modified A/L method in the language laboratory. This is the age when what Chomsky calls the language acquisition device is still fully operative. One term out of 11 or 12 years of a child's school life could be transformed into an adventure in a foreign language, culture, way of life and all that goes with it!

Finally, what about the language teacher of our times? The more audio-visual aids to teaching are going to be used, the greater is the need for the language teacher to be on par with, or at least as close as possible to the seen or unseen voices which come to the student from the tape, earphones or the video tape. The desirable degree of fluency in a foreign language is not easy to achieve and to maintain. Nothing short of a regular study leave and a refresher course in a foreign country—a sort of sabbatical leave—can accomplish this. The language teacher has a much more justifiable claim to this than his other colleagues; we should not look at this as some distant ideal but work for it to become a reality within a few years.

But a competency in one or more foreign languages is by no means a guarantee of a satisfactory performance in the classroom; only an adequate pedagogical education combined with equally adequate practical training can equip a teacher for this task. Some teacher training has been extended but at the university level the Art or Science degree have no bearing on teaching and one Dip.Ed. year may—or may not—fill the pedagogical and practical vacuum. It is a rather sad reflection on the Dip.Ed. or Teachers' college education to find that for the last few years they have been turning out some graduates unequipped to handle anything but Verstehen und Sprechen or Ecouter et Parler. Their potential to accept, assimilate and utilize the advantages of a variety of teaching methods, old and new, and to be able to fall back on their own resources, has barely been touched. Whereas a young teacher today, from a College or a university, professes often quite vocally to have his own independent view of just about anything and everything in society, from sex and drugs to politics and religion, it is rather discouraging to see that in spite of their training and education, their critical ability as regards their own professional field has frequently become stultified and blunted.

Summary

—The need for FL teaching in secondary schools with a possibility of its extension to primary schools.
—Language skills and the need for some reappraisal of the hierarchy more in line with prospective use.
—Teaching methods; the A/L is not the last word, certainly not in secondary schools.
—The questionable value of language laboratories in secondary schools and the need for a thorough re-assessment.
—Planning for the best utilization of resources in future:
  (a) material requirements (classrooms, etc., hardware, etc.).
  (b) initial teacher training.
  (c) subsequent refresher training of FL teachers.

THE OUTCOMES OF SECONDARY EDUCATION

DR. R. G. ROWLANDS

Introduction

This paper is concerned with the clarification of some of the major issues in the great educational debate which continue to perplex and disturb so many people. Because there are vast numbers of variables involved in any discussion of education and its outcomes, it is necessary to build a model in which many of the variables are ignored, or played down, so that the others can be given closer attention. The trouble is that the disputants tend to build their own models and to misunderstand each other because the words they use undergo subtle changes of meaning when applied to someone else's model. To achieve clarification it is necessary to go back again and again to first principles and avoid this popular present-day pastime of playing semantic games which are good fun if what you want to do is create consternation, confusion and eventually chaos.

The construction of a model implies a selective treatment of large numbers of variables and their interactions. It is therefore an over-simplification which can never bear a one-to-one correspondence with any actual educational institution. It would be impossible for all the myriad activities and dynamic relationships of an actual school to be completely mapped into any model which might be constructed for research purposes.[1] A distinction has to be made between the mental construct and the reality. The model concentrates attention on certain aspects of reality so that they become amenable to research methodology, but it is wrong in principle to confuse the model with the reality which it helps us to understand.[2]

The way in which the model was 'dreamed up' in the first place does not matter very much. The important thing about it is the nature of the predictions which can be deduced from it. The test of a model is whether it gives rise to some definite prediction such that there is a genuine possibility of refutation. A strong model is one which has been subjected to such tests and has survived them. Strong models have long been a feature of the natural sciences but in the social sciences there has been a great deal of model building of the persuasive kind. Once the convert's eyes have been opened he finds that the model can explain practically anything and everything that happens in the field to which it refers. Confirming instances abound in all directions. It is precisely because of this that such models are slippery. They can never be tested because they never face up to the possibility of refutation.[3]

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[1]Suppes, P., 'On the Problems of Using Mathematics in the Development of the Social Sciences', Australian UNESCO Seminar, *Mathematics in the Social Sciences in Australia*, Australian Government Publishing Service, Canberra, 1972, pp. 3-15.
[2]Wilson, N., 'The Nature and Processes of Science', *Australian Science Teachers' Journal*, 14, 1, pp. 60-66.
[3]Popper, K., *Conjectures and Refutations*, Routledge, London, 1965, pp. 34-5.

Occasionally it happens that there is a kind of confrontation between a strong model and a slippery one and in the ensuing debate the devotees of the latter appear to be scoring many points and gaining much support for their cause. They are convinced that they are arguing from a position of strength and often deceive themselves by the persuasiveness of their own propaganda into believing that history, or nature, or justice, or some other abstract concept is fighting on their side. In fact, their apparent strength is their real weakness because they have placed their trust in a slippery model. This paper describes just such a situation and gives some insight into the effect which it has on the attitudes of practising teachers.

The traditional model

The most well-established and commonly accepted model of an educational institution is that which depicts it as 'a dynamic mass of interacting and often interdependent component variables'.[4] Among the major components of this traditional model are intakes, processes and outcomes. The institution is, of course, much more than the sum of the components of the model. It may, for instance, have expected outcomes which are too subtle to be measured by available methods and are therefore labelled as intangibles. Nevertheless the model is a strong one because it enables predictions to be made which run a real risk of refutation. A lack of conformity between observable outcomes and expectations deduced from the model constitutes a genuine test which may lead to the modification of the model, or even to its complete abandonment. The model is also flexible in that it can be applied to many different types of educational institutions—primary, secondary or tertiary. It can be applied to a whole institution or system of institutions and it can also be applied to any sub-section of an institution, such as a department, a year of study, or even a single class within a school.

The model also possesses remarkable adaptability. Rapid changes do not invalidate it, although they may generate stresses which some will regard as evidence of its inadequacy. This sort of situation has arisen in Victoria. The last 25 years have been a boom time for secondary education. There have been very great increases in the numbers of secondary schools, of secondary students, and of secondary teachers.[5] Even more remarkable has been the increase in the holding power of the schools. The numbers of young people staying at school for the full six years of secondary education have increased dramatically. There have been great changes in intakes, in processes and in outcomes.

In the past a significant outcome of the processes of secondary education was a kind of step-wise selection which meant that only a small minority of the intake survived the full course. This is no longer the case. In fact, it is now widely stigmatised as elitist and therefore highly undesirable. So also is the situation at the end of the sixth year when the Higher School

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[4]Genn, J. M., 'Measurement of Schools, Colleges and Universities—Progress, Problems, Prospects', *Australian Journal of Education*, 16, 3, pp. 301-315.

[5]Brooks, F. H., 'Growth and Change in Victorian Education', *Bulletin of the Victorian Institute of Educational Research*, 26, pp. 1-11.

Certificate examination is called upon to carry practically the whole burden of selection. The resultant stresses have been severe. So much so that many strange remedies have been proposed and there has been much darkening of counsel by words without knowledge. Under conditions of stress such words can have a powerful appeal. They make a difficult and complex problem appear to be easy. They present us with an attractive picture of young people happily accomplishing their developmental tasks without any form of competitive striving. They get rid of the sinister authority figures who are blamed for this latter aspect of secondary education by simply saying that they must be abolished.[6]

The progressive model

It is somewhat disconcerting for a person who is intent on gaining a better understanding of the outcomes of secondary education to be told that there are no outcomes of secondary education. After recovering from the initial shock some time has to be spent in analysing this kind of statement in its context. It then becomes apparent that not only has a totally different model been substituted for the traditional one but the word 'education' has also been subjected to a subtle change. The model of intakes, processes and outcomes has been discarded in favour of one which envisages an artificial environment in which the natural growth and development of childhood and adolescence can take place without interference. It is important to realise that this is an entirely different model which has been substituted for the original one and many of the terms habitually used are no longer applicable. Others must be greatly modified in their meaning before they can be applied to the new model. Secondary education, to those who accept this model, has a totally different meaning from what most people think it has. It is a matter of providing optimum conditions for that growth and development which takes place between early adolescence and young adulthood.[7] Since these are changes which would have occurred anyhow they can hardly be described as outcomes of secondary education.

Thus it is that on this model there can be no outcomes.[8] All the generations of teachers who have laboured so long and diligently to make their students develop in a certain way which they thought to be desirable have been the victims of a great delusion. No matter whether they thought they were instilling a love of learning, or producing responsible citizens, or giving a good grounding in French irregular verbs, they were deceiving themselves. If the progressive model is accepted their labour was well and truly lost for there could be no such outcomes.

Likewise their belief that they were subjecting their students to anything which could be called an educational process must have been equally erroneous. The most they could have hoped for would be to provide optimal conditions under which growth and development could take place. But this

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[6]Hannan, W., 'A Scheme to be Rid of H.S.C.', *The Secondary Teacher*, 174, pp. 10-12.
[7]Bereiter, C., 'Schools without Education', *Harvard Educational Review*, 42, 3, pp. 390-413.
[8]McBurney, B., 'Ballot for Tertiary Entrance', *The Secondary Teacher*, 178, pp. 3-4.

could never have been achieved because there was always too much active interference with nature. The progressive educationist constructs a model which is rather like that of the laissez-faire economist. He sees the role of authority as one of masterly inactivity. It is a mere holding of the ring so that the natural self-regulatory system he has postulated can operate freely. Perhaps such an analogy is too naive. It might be fairer to say that he sees the role of authority in much the same way as one who accepts the Marxist model of history sees the role of the State. When true communism is finally implemented the State will wither away. Meantime we must not be surprised if there is a rise in the arbitrary exercise of petty tyranny as the safeguards which were designed to prevent this are progressively swept away.[9]

If this model is accepted there is not much sense in dividing education into stages. It goes on continuously until about the age of 18. With the onset of adulthood education finishes and vocational training may begin. Thus, there is no such thing as tertiary education, only vocational training and/or spare time entertainment to help fill up the leisure hours. The institutions which provide these services for adults are engaged in something entirely different from secondary education and if they have a problem of selection they must solve it themselves.[10] The secondary schools can give them no help beyond testifying that all students who have completed their courses can be regarded as adults. As they would have become adults anyhow such a testimonial would be of no value as a selective device. The advocates of the ballot as an instrument for tertiary selection make it quite clear that anyone over a certain age would be entitled to apply for admission to a tertiary institution regardless of their educational background. They would be included in the ballot unless they voluntarily withdrew after an orientation session which would be directed entirely at giving help and realistic advice and not at selecting suitable applicants.[11]

The confrontation

Exponents of the progressive model usually claim that the traditional model must be rejected because it has become unworkable. It depends on persuading the great majority of youngsters to work for marks, or grades, or passes, or something else that amounts to the same thing.[12] This, they say, has always been educationally insane and it simply will not wash any more because the young people have dropped to it at last. The word has got around that marks are not worth a cracker, so why work for them? Likewise with the other devices by which the traditional school has gained the involvement and support of its students. School rituals are increasingly held in derision and the acceptance of the good-student image is rapidly declining. It is said that both teachers and students are rapidly losing faith in these

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[9]Fensham, P. J., 'The Baby and the Bath Water', *The Educational Magazine*, 29, 8, pp. 6-8.

[10]Hannan, W., 'The Ballot', *The Secondary Teacher*, 180, pp. 12-14.

[11]Mahar, T., 'The Ballot—How it Might Work', *The Secondary Teacher, 185*, pp. 17-18.

[12]Goodman, P., *Growing Up Absurd*, Random House, N.Y., 1960.

bulwarks of the traditional school. Such a breakdown is irreversible and the whole structure is in a state of collapse.[13]

All of which sounds plausible if it could be accepted as a fair presentation of the traditional model. Such concepts as 'working for marks', involvement in 'school rituals', and acceptance of 'good-student morality', do not really do justice to the rich pattern of dynamic interactions which constitute the realities of the process of secondary education as they occur in the traditional school. Besides the well-known student-teacher interactions in the cognitive, affective and psycho-motor domains of learning, there are interactions with the school environment in libraries, laboratories, multimedia services and recreational activities which are becoming increasingly important. The traditional school is not a static institution held by a dead hand in a grip that can only be broken by an educational revolution. It needs to know more about the effectiveness of its processes and the scope of its outcomes, but what is known already gives considerable support for the view that the model should not be abandoned in favour of a largely untried alternative.

The progressive model suffers severely from a lack of clarity of terminology and from internal inconsistencies which make it very difficult to evaluate experimentally. Its exponents are much addicted to torrents of words but their terminology is semantically soft. Analysis is difficult because the meanings of terms are frequently changed without notice. A major difficulty arises from the concepts of the natural and the artificial. It is natural growth and development that is to be fostered, but the optimal conditions for this are to be provided by an artificial environment within the school.[14] Outside interference cannot be tolerated. Yet how can an isolated and insulated community like this promote natural development? Recently the most radical advocates of the progressive model have become aware of the contradiction and have issued a call for drastic action. Nothing less than the total abolition of the artificial environment of the school can satisfy the demands of the de-schoolers.[15] It is this kind of logic which makes the progressive school so unacceptable as a viable alternative to the traditional model.

Word from the work-face

It is impossible to set up a decisive experiment which can discriminate between these two models and result in the confident acceptance of one and rejection of the other. Nevertheless there are some very different predictions that are made on the basis of these models and that are susceptible of investigation. These are predictions about teachers' attitudes, about their declining faith in the processes of secondary education, and about the inevitable disintegration of the traditional secondary school and its transformation into something quite different. A good deal of evidence which

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[13]Silberman, C. E., *Crisis in the Classroom*, Random House, N.Y., 1971.
[14]Neill, A. S., *Summerhill*, Hart, N.Y., 1960.
[15]Illich, I., *Deschooling Society*, Lothian, London, 1972.

is relevant to this situation has come to light as a result of the teachers' assessments project in Victoria (TAP).[16] All teachers of Higher School Certificate classes were asked to provide assessments of the quality of each of their students. The wording of the original request was as follows:

> We want your professional opinion as a teacher of the quality of each student studying your subject, and we hope that you will be able to take into account factors which current forms of examination do not assess.

The teachers appeared to have fulfilled this request in making their assessments for 1971 because a principal components analysis was carried out for the 20 most popular subject groupings and the factor patterns for standardised H.S.C. marks and standardised teachers' assessments were compared. On the whole the patterns were remarkably similar but the teachers' assessments showed a larger general component than was the case for examiners' marks. This suggested that the typical teachers' assessment of the typical student included an overall appraisal of him as a whole person.[17]

Since the typical student was assessed independently by up to five different teachers the greater magnitude of this general component of teachers' assessments as compared with examiners' marks, and its consistency across so many different subject groupings, was quite impressive. Such a consensus of opinion expressed independently by several teachers probably meant that they were providing additional information about the students which could not be obtained from examiners' marks alone. To find out the nature of the information which the teachers actually took into account a questionnaire was prepared and sent out when the 1972 assessments were returned to the teachers for checking. This listed 29 items which the teachers may have taken into account and provided space for further items to be written in.

The response to the questionnaire was excellent. Virtually 100 per cent of teachers of H.S.C. classes returned the forms and over 500 of them had taken the trouble to write in additional comments in the space provided. A few of these were somewhat facetious but remarks which did not occur more than once were dropped from the analysis. The result was a very solid mass of serious opinion about the assessment of the outcomes of six years of secondary education and about the indicators of quality in a student. By far the most important indicator was 'performance in internal examinations'. Next in importance was 'clarity of thought'. Two items selected from widely different areas, yet evidently closely linked in the minds of the teachers. This is not really surprising since 'clarity of thought' is a stated aim of many of the H.S.C. subjects as set out in the Handbook and an implied aim in the others. It is an expected outcome and if the internal

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[16]Rowlands, R. G., *Teachers' Assessments in Relation to the Higher School Certificate and the Problem of Selection for Tertiary Education*, V.U.S.E.B. Report, 1972.

[17]Bainbridge, J. R., *Teacher Assessments in Different Subjects of the 1971 Higher School Certificate Examination, Victoria.* Paper presented at the 1972 Conference of the Australian Association for Research in Education.

examinations are valid measures of the extent to which the aims of the course have been realised they must carry a heavy weighting on this, the most universal of all the aims.

The five main areas in which the items were grouped were:

(i) Academic performance.
(ii) Personal attributes.
(iii) Environmental influences.
(iv) Mental and physical characteristics.
(v) Values.

To minimise the effect of response sets these areas were not named on the form. All that appeared was a list of 29 apparently random items of which any number could be ticked. The two most popular indicators came from areas (i) and (iv). Following them came 'course work' (i), 'hard work' (ii), 'persistence' (ii); 'oral work' (i), 'topic tests' (i), 'assignments' (i), and 'examination technique' (ii), in that order. All of these indicators were selected from areas (i) and (ii), and together they constituted a broad picture of quality in a student which might be expected from teachers who had completely accepted the traditional model.

Taken together, these things must surely represent the very essence of 'good student morality'—doing one's best in paying conscientious attention to course work, in carrying out assignments, in building up competence in oral work, in careful preparation for each topic test, and so gaining a mastery of examination technique. All this helps to generate habits of hard work and persistence which in their turn may be expected to win due recognition and reward. These are some of the most familiar features of the traditional model. There can be no doubt that they contribute in no small measure to a peaceful and orderly school life, but they are anathema to the advocates of the progressive model 'for whom they spell joyless drudgery, artificiality and meaninglessness, and the destruction of individuality'.

Perhaps the most striking result which emerged from a preliminary analysis of the responses to the questionnaire was the emphatic rejection by the teachers of the whole of area (iii), environmental influences. The four items in this area were:

Attitudes of peer group.
Parental pressures.
Cultural level of home.
Community pressures.

All of them scored a relatively insignificant level of support as compared with the nine items discussed in the previous paragraph. The decisive nature of this negative result must be considered in the light of the enormous importance attached to environmental influences by the supporters of the progressive model. They believe that the outcomes usually attributed to traditional teaching are in fact due to the potent environmental influences of area (iii). They argue that those who succeed in the traditional secondary school do not do so by hard work and persistence but because they have been fortunate enough to be moulded by the 'right' environmental influences.

The emphatic rejection of the environmental influences of area (iii) as indicators of quality in a student was consistent with a conservative mental outlook among the teachers which was further manifested in their responses to the items of area (v)—values. The three items in this area were:

Intrinsic motivation.
Vocational aspirations.
Social aspirations.

Since one of the bulwarks of the liberal cultural tradition of education has always been a strong belief in the pursuit of learning for its own sake it is not surprising that the only one of these items to receive substantial support from the teachers was 'intrinsic motivation'. It definitely remains as one of the hallmarks of a good student. Of the other two items in this area only 'vocational aspirations' received a significant level of support. 'Social aspirations' received negligible support and came a bad last among all the items on the list. No doubt the teachers regarded this as an unworthy type of motivation and in doing so they would be in agreement with the liberal cultural tradition but at odds with the popular view of the traditional secondary school as an important avenue of upward social mobility.

The last say

As usual, this must go to the supporters of the progressive model. They point out that the significant changes in the attitudes and values of young people which have occurred in the last 10 years have come about in spite of the efforts of traditional secondary teaching. The rapid extension of secondary education along the lines of the traditional model might have been expected to produce a very different kind of cultural revolution. The students changed in unexpected ways and the schools were forced to a grudging and belated acceptance of fashions and life-styles which they formerly opposed.

There is no hint of anything like this to be gained from the responses of the questionnaire, either in the items listed or those written in by the teachers themselves. They do not give the impression of people who are struggling to hold back a rising tide of cultural change which is carrying them in a direction quite contrary to the one in which they wish to go. The assessment of the situation by those at the work-face is simply a reassertion of the strength of the traditional model and a massive rejection of the progressive model as a viable alternative.

'FOREIGN ACCENT' OR MASTERY OF SPEECH RHYTHM?

MISS C. ADAMS

Some thoughts on teaching and learning the prosodic features of English.

The alternative presented in the title of this paper is not intended as a provocative discussion starter. It is my belief that mastery of rhythm is the key to proficiency in the spoken language and that inadequate control of this feature is the ultimate barrier to fluency. Unfortunately, by the time the foreign learner realizes that his stubborn accept is but a manifestation of imperfect learning of the several associated systems which constitute rhythm, it is extremely difficult for him to correct his well-practised errors. The problem is especially serious in the case of English since in this language the features which are concerned with transmission of the rhythmic impulse are also concerned with the marking of attitudinal contrasts and thus phonological transgressions have far-reaching implications at the semantic level.

As Thomas Sheridan, the actor-teacher father of the celebrated dramatist, rightly pointed out some 200 years ago, the great difficulty of the English tongue lies in the pronunciation. Sheridan, who aroused a great deal of interest in the spoken language through his *British Education* (1756), went on, you may perhaps remember, in his famous *Dissertation on the Causes of the Difficulties which Occur in Learning the English Tongue* (1762) to deplore the contemporary lack of method in teaching pronunciation and advocated an approach to the subject which even by modern standards must be regarded as remarkably enlightened.

Yet despite the very considerable advances in methodology which have been implemented since Sheridan's time, those of us who work in the field of English as a Foreign Language today would, I think, concur with his thesis. For although a number of the innovations he recommended—such as, analysis and description of the English sound system, methodological use of contrastive analysis, study of articulatory phonetics, a system of phonetic notation, and use of the pronouncing dictionary—have now been adopted by many language teachers, the problem of faulty pronunciation remains as vexatious today as it was when Sheridan taught English, various types and varying degrees of foreign accent persisting—in defiance of the method used —long after the termination of both intensive crash courses and courses of more protracted duration.

One of the main reasons for my concern with the problem of foreign accent is related to my work here in the University of Sydney with overseas students taking the course leading to the Diploma in the Teaching of English as a Foreign Language. These men and women are graduate teachers who have had several years' experience teaching English in their respective countries, and they come here, not to learn English, since as candidates for the course they are expected to be proficient in the language, but rather to

upgrade their professional skills and to develop a general theory of language teaching. However, they invariably bring to their pronunciation of English errors in sound production, stress and rhythm, while many, who are native speakers of tone languages, in addition allow discrete phonemic tones to interfere with their control of intonation. Frequently the degree of their foreign accent is such that their efficiency as teachers is impaired. Understandably, they hope that while resident in an English speaking country they will be able to improve their own pronunciation as well as reviewing approaches to the teaching of this area.

I do not intend to discuss in this paper the question of what is the 'proper' accent for the foreign learner. The comparative merits of the various accents of native English pronunciation have been debated interminably —generally with inconclusive results—and as Palmer pointed out long ago, 'the divergencies between pronunciation dialects are unimportant compared with the divergencies between any native pronunciation and a foreigner's pronunciation'. Nor do I intend to discuss the level at which foreign accent in the non-native teacher of English makes for unacceptable pronunciation. With Chomsky,[1] I believe the aim of the foreign learner should be mastery which approximates to the linguistic competence of the native speaker. However, such knowledge of a language is not easily accomplished—especially when in performance it means the ability to process complex linguistically coded information and to produce, spontaneously, equally complex utterances. According to Katz,[2] the learner cannot be credited with mastery of the foreign language if he is only able to understand and produce sentences the meaning of which he has previously been taught. The real test of fluency is the ability to produce and understand novel sentences. He says:

> 'Given that fluent speakers are fluent because of their knowledge of the rules of the language and that linguistic communication is a process in which the meaning that the speaker connects with the sounds he utters is the same meaning that the hearer connects with these same sounds, it seems necessary to conclude that speakers of a natural language communicate with each other in their language because each processes essentially the same system of rules'.

It follows that competence in a foreign language depends on whether, and to what extent, the rules the learner is taught approximate to those which the native speakers of that language acquire naturally. But clearly there are always likely to be problems of facilitation and interference when an individual who has learned the systems of one language to a high degree of competence attempts to learn another language in which, as John Carroll,[3] the American educator and psycholinguist puts it, 'his competence

[1]Chomsky, Noam, 'Current Issues in Linguistic Theory', in Jerry A. Fodor and Jerrold J. Katz, *The Structure of Language*, Englewood Cliffs, New Jersey, Prentice Hall, Inc., 1964.

[2]Katz, Jerrold J., *The Philosophy of Language*, New York and London, Harper & Row, 1966.

[3]Carroll, John, *Contrastive Analysis and Interference Theory, Report of the Nineteenth Round Table Meeting on Linguistics and Language Studies*, Washington, D.C., Georgetown University Press, 1968.

is initially at least virtually nil'. In language learning our aim is to supplement rather than to replace the original set of habits and in some systems particularly the prosodic systems (i.e. intonation, stress and rhythm) these habits are remarkably tenacious. Thus interference can be a major obstacle to mastery of the foreign language. It was in order to determine the nature and degree of mother tongue interference on my students' English speech rhythm that the investigation to which I refer in this paper was undertaken.

The whole study has included several related investigations but the results of only two will be given here:

(1) an objective investigation of the position and duration of pauses in the connected utterance of native and non-native speakers of English, the instrumentation used being an electronic sound level speech/silence indicator;

(2) an experimental teaching programme featuring material with a strongly metrical rhythm.

Twenty-two subjects were used in the pause interval investigation. These included 11 native speakers of English whose average age was 38 years and 11 non-native speakers whose average age was 31. The foreign subjects were native speakers of Vietnamese (5), Cambodian (2), Bengali (2), Indonesian (1) and Filipino (1). As TEFL students, all were graduate teachers of English who had been engaged in this work for an average of 7.45 years. When tested they had been living in an English speaking community for approximately three months, although in their respective countries they spent only an average of a little over three hours daily speaking English. Most of them spoke English with a staccato-type utterance which was clearly very different from native English speech rhythm, and although they were vaguely aware that the impression of rhythm is produced by means of weight and span and pace in varying proportions and combinations, they had extremely limited knowledge of the principle of the phenomenon in relation to English.

While every language has a characteristic speech rhythm, not all languages arrange their rhythm units in the same way. It is generally held that in English the timing of these units (i.e. a group of syllables uninterrupted by a pause) is achieved by the isochrony of the stressed syllables; that is, the stressed syllables which mark the rhythmic impulse occur at more or less regular intervals of time. However, many other languages have a rhythm which is more closely related to the syllable in that the syllables rather than the stresses tend to occur at uniform intervals. Thus in 'syllable-timed' languages, for instance, the duration of an utterance is proportional to the number of syllables it contains. In English, syllables are of uneven duration and thus even though the actual number of syllables in the rhythm groups of an utterance may vary quite considerably, the impression of isochronous intervals is maintained. It is this matter of syllable quantity which makes the rhythm of English so exasperatingly difficult for the non-native speaker, for while most foreign learners have heard or read that in English the unstressed syllables are crowded together between the stressed ones, they fail to realize the significance of timing in regard to syllabic structure. Furthermore, they never, unaided, seem to grasp the principle of what

Abercrombie[4] terms 'silent stress' but what I prefer to call the *connective pause*. Very few native speakers are in fact aware of this phenomenon, although intuitively they are constantly using it to preserve the rhythmic impulse established by the more tangible realizations of stress. However, the foreign learner must consciously gain control not only of this mechanism but also of the several other parameters associated with stress and rhythm; namely pitch, duration and intensity. It is the responsibility of the language teacher to ensure that he does. What a predicament when the non-native teacher is not himself sure of the rules!

Since the pronunciation of the learner can hardly be better than the model he is given, it is obvious that the modelling of English with foreign accent—charming though it may be at times—merely perpetuates incorrect pronunciation usually with further deviations produced by the individual difficulties of as many students as there are in a given class. The teacher who is a native speaker of the language he professes clearly has an advantage over the foreign teacher—yet we find foreign accent rife in the classes of native English teachers whose own pronunciation is impeccable.

Is foreign accent then an inescapable concomitant of second language learning? I do not believe that it is. However, I suggest that the systems which more than any other are responsible for foreign accent are neglected because of the language teacher's insufficient knowledge of their nature and function. These systems—all syllable-based—which are variously known as the prosodic or suprasegmental elements, are almost always imperfectly understood, acquaintance with them being based more often than not on misleading statements made by writers of handbooks, who in their well-meant attempts to simplify a most complex area of language, actually distort the perceptive but unfortunately partial only descriptions offered by phoneticians in the days before thorough theoretical and descriptive research had been undertaken. Nowadays, as a result of improvements in technology, systematic instrumental analysis has replaced the impressionistic observations of earlier times, and it is possible for the experimental phonetician to investigate linguistic phenomena objectively and to present descriptions and taxonomies with scientific accuracy. However, he is by no means obliged to interpret his findings in the interests of pedagogy, and if, as Bernard Spolsky[5] maintains, we know very little about language teaching generally, I feel that one cause of this is our failure as teachers to extrapolate from laboratory theory to classroom practice. It is a sad fact but in the main true, I suspect, that as Carroll[6] has intimated the teacher has not caught up with the theorist, being as often as not completely unaware of what the research worker is doing. My TEFL students have perhaps been an exception to this generalization.

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[4]Abercrombie, David, 'Some Functions of Silent Stress', *Edinburgh Studies in English and Scots*, ed. Aitken, McIntosh, and Palsson, London, Longman, 1971.

[5]Spolsky, Bernard, 'A Psycholinguistic Critique of Programmed Foreign Language Instruction', *International Review of Applied Linguistics in Language Teaching*, Vol. IV, 1966.

[6]Carroll, John, 'Contributions of Psychological Theory and Educational Research to the Teaching of Foreign Languages', *Modern Languages Journal*, XLIX, May, 1965.

Always enthusiastic, they willingly assisted me in the various phases of my research project and it is as a result of their co-operation that I am able to offer this report.

The test material for the pause interval investigation consisted of 12 items which included nursery rhymes, simple verse, prose, and sentences fabricated to correspond to the metrical rhythm of the nursery rhymes and verse. After having had sufficient time to peruse the material, each subject was asked to read the items as naturally as possible. The utterances were recorded on magnetic tape and simultaneously certain acoustic phenomena were registered by a Trans Pitchmeter and displayed on mingograms. The four channels of the mingograms showed:

(i) an integrated intensity display
(ii) a speech/silence trace
(iii) a duplex oscillogram of the speech wave
(iv) a fundamental frequency trace.

In addition, time-of-utterance was marked in 0.1 second (Fig. 1).

Analysis of the data revealed certain characteristic features of the utterance of the non-native subjects which are relevant to our consideration of first language interference on English speech rhythm. Foremost among these are:

(i) the large number of pauses used by the non-native subjects;
(ii) the relatively high ratio of pause intervals to total duration of utterance in the case of these subjects (Appendix 1).

The numerous pauses made by the non-native speakers are of interest because not only were they used to delimit sense groups and rhythm groups but also at times to replace the linking mechanisms ordinarily used by native speakers to indicate word and syllable boundaries in connected speech. I use the term *pause*, therefore, to subsume both the intervals of silence separating speech groups and the transitional phenomena used to catenate the smaller linguistic units. It was arbitrarily decided that periods of silence 50 millisecond and longer should be regarded as pauses, 50 millisecond being the minimum duration used by the native speakers to mark phrase boundaries. In native English speech the tranisition from word to word within a sense group and from syllable to syllable within a word is accomplished without any apparent break in the flow of speech, but in this investigation the non-native subjects tended to use short pauses to mark both word and syllable boundaries. The impression thus given was of a series of discrete syllables rather than of mooth transitions from sound to sound at syllable boundaries.

(This feature of non-native pronunciation can be observed in the mingogram shown in Fig. 1.)

Typically, the release of voiceless plosive sounds was delayed, and they were followed by abnormally long pauses (in this case of 175 and 250 milliseconds).

Not observable here was the subject's use of strong forms of words in unstressed positions; e.g.:

/tu/ /ma-kɛt/ rather than the usual pronunciation /tə makət/ .

The effect of such failure to make qualitative and quantitative adjustment of unstressed syllables was even demarcation of all syllables—a factor which contributed markedly to an impression of syllable-timed rhythm.

Other features of the utterance of the non-native speakers which further contributed to their staccato-type rhythm when speaking English included:

(i) failure to produce the articulation know as *lateral plosion*—with the resulting addition of an extra vowel, and consequent lengthening of the syllable; e.g.:

/li tl/ rather than /li tl/

(ii) failure to make liaisons ordinarily observed by native speakers; e.g.: *homeagain;*

(iii) incorrect lexical stress—i.e. misplaced accent—e.g.:

oppor'tunity was frequently pronounced *op'portunity* and *'porpoise* was frequently pronounced *por'poise.*

The large number of pauses made by the non-native subjects obviously increased the overall duration of their sentences; for example, the average duration of item 4 containing 56 syllables, as spoken by the native subjects was 10.5 seconds, and by the non-native subjects was 13.1 seconds.

In Fig. 2 is shown a mingographic recording of a native English speaker's utterance of item 1. Duration of this sentence was 4.35 seconds, compared with 5.2 *seconds* as spoken by the non-native speaker whose mingogram is shown in Fig. 1.

Features to note are the binary divisions and the isochronous sub-sections. The duration of the second speech interval was 1.9 seconds and of the first, 2.00 seconds. However, the subject paused for 100 milliseconds after *market* within the first interval and by this means marked the equal time period taken to say each sub-section of the interval.

In no case was a non-native speaker able to equalize the duration of the two sections of a nursery rhyme (or any other item) by using a connective pause or 'silent stress' to produce two completely isochronous sections in an obviously bipartite item. Whereas the native speaker effects this balance by adjusting the length of pause between word groups, the inability of the foreign subjects to control this interval suggests influence exerted by their syllable-timed first language.

The fact that a number of the non-native speakers tended to pause in places which would be unusual for the native speaker is an indication that they had not grasped the principle of unitizing sequences of words in conformity with the rules of the language. As teachers of English they must have been aware of the hierarchical structure of the texts yet their performance did not attest to their knowledge of the rules. By regarding the word (and in many cases, the syllable) as the unit for assessing the length of the sentence, they failed in many instances to convey the single idea contained in a sense group, thus demonstrating their lack of proficiency in organizing or programming their speech output.

Examples of inept phrasing such as the following were common:

In the breathless / stillness of a / tropical afternoon / when the air was / hot and / heavy and the sky / brazen and / cloud / less / the

shadow of the *Malabar* lay solitary / on the surface of the glittering / sea / . (item 3)

When I asked / her / what she / would have done / if he had spo / ken to her in the street / she / smiled / and said / that / as she seldom / walk / ed in that direction / it didn't seem like / ly that / he / would / have much / oppor / tuni / ty / ever / to speak / to her / . (item 4)

Apart from faulty linguistic organization and an inability to cope adequately with the various linking mechanisms of spoken English, first language interference at the phonetic level also seemed to contribute to the frequency of occurrence of the short pause. In the first language of several of the subjects final consonant clusters are non-existent and, unable to articulate them correctly, the speakers tended to omit them altogether; thus:

lights out became *li - - out*, and in the medial position, *sixteen* became *si - - teen*.

In cases of homorganic sequences of phonemes where the point of articulation is similar for successive sounds; for example / nt / in *want*—the nasal sound was produced as the final consonant of the word and the / t / was elided, or was uttered separately—sometimes as an extra syllable. The considerable delay between the utterance of vowel and final voiceless plosive consonant in such words as *market* could have been associated with some speakers' desire to aspirate the sound (especially if aspiration were phonemic in the native language) whereas a native English speaker frequently produces unreleased plosives in the final position in free variation with the fully aspirated variant.

It would seem that the many examples of the non-native speakers' failure to articulate final consonants and to elide medial plosive sounds could be associated with use of the glottal stop in their first language. The glottal stop, which is not phonemically distinctive in English, is sometimes substituted for / p / - / t / - / k / in defective speech. However, a number of the subjects appeared to substitute at times not a glottal stop but a short pause (frequently of about 50 milliseconds duration) for these consonants.

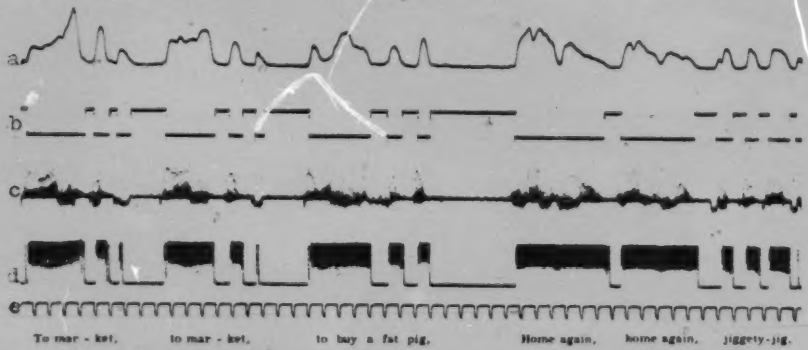

Figure 1—Mingogram of non-native speaker's utterance of item 1.
a = integrated intensity
b = speech/silence intervals
c = duplex oscillogram of speech wave
d = fundamental frequency
e = time-of-utterance in 0.1 second.

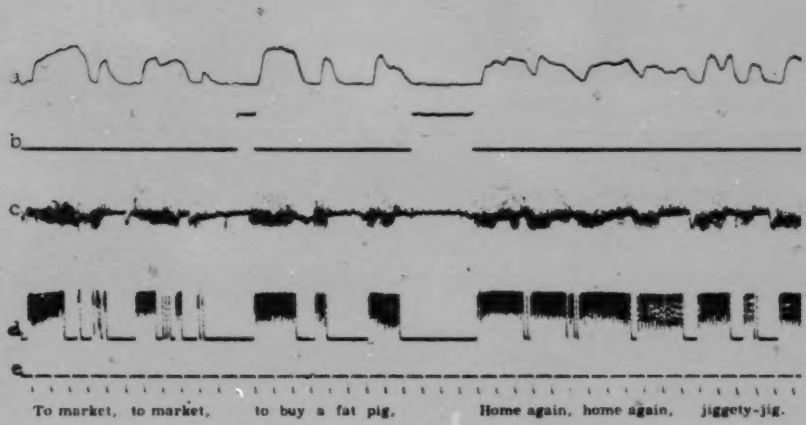

Figure 2—Mingogram of native English speaker's utterance of item 1. Traces a-e as in Figure 1.

Having thus determined the nature of mother tongue interference on the speech rhythm of these Asian teachers of English, my next step was to devise a teaching programme which would assist such speakers to acquire a more acceptable rhythm.

The students who participated in the experimental teaching programme numbered 30. They were also teachers of English from South-East Asian countries and they manifested the same pronunciation faults as had the students in the previous experiment, their countries of origin being Vietnam, Cambodia, Indonesia, Korea, Japan, Thailand, Burma, Malaysia and Fiji. They were randomly selected as members of either the experimental or control group but once this division had been made they were carefully matched according to mother tongue, sex, and number of years experience with English. The initial equivalence of the two groups is shown by the result of a paired *t*-test in which the difference between the experimental and control groups on the pre-test was found to be statistically not significant. (Appendix 2.)

The experimental group of 15 students was then given 18 hours of class instruction in the management of English speech rhythm. The classes were held three times weekly and were of one hour's duration. During that time the students were instructed in some of the principles of English speech rhythm; they compared the rhythm of their native tongue with that of English; and did considerable practical work.

Two months after the pre-test both experimental and control groups were re-tested. All subjects showed improved performance in the post-test as compared with the pre-test, but it was found that the experimental group had improved twice as much as the control group, the difference in improvement being statistically significant at the 0.1 per cent level. Clearly, the teaching programme had been outstandingly successful.

The three adjudicators who assessed the recorded utterances of the students on both tests worked independently evaluating the rhythm of the readings on a rating scale (0-5). All were experienced teachers of English

who had a special interest in the spoken language. Nevertheless, they were issued with a few guidelines on the criteria particularly to be observed in their evaluations, and in order to obviate the possibility of recognition of students on pre- and post-tests were presented with tapes of the readings arranged in random order. Thus, order of presentation did not indicate whether the subject being assessed was on his pre-test or his post-test. The test material consisted of items of prose and verse arranged in order of difficulty from simple narrative prose to the subtle poetry of T. S. Eliot.

I do not claim that the approach I used in this experiment would necessarily succeed in all foreign language learning situations. As Carroll[6] has pointed out quite rightly, I think, contrasting methods of instruction cannot be differentiated solely in terms of their overall results. What is needed—as he maintains—is a precise knowledge of the conditions under which the various methods succeed. I think we would all agree. The teaching programme I have referred to in this paper, for instance, was devised specifically for native speakers of Asian languages on the basis of the results of the investigation I have outlined. The indications are that native speakers of European languages would likewise profit from a rhythm oriented course although I have no evidence at this stage for such an assumption. But even when as teachers we use a particular method under optimum conditions, we have no way of controlling the techniques our students will actually adopt to acquire a certain skill. It is quite possible, for instance, that in learning one skill they may prefer to acquire conscious control of patterns through analytical study of the patterns as a body of knowledge, whereas in acquiring another skill they may simply prefer to make their responses automatic by means of the 'mim-mem' technique—that is, by memorization and imitation. Thus the degree of proficiency acquired by the learner may not be the result of a particular method of instruction but rather the result of his own learning strategies. There appears to be no single 'best' teaching method, although examination of the practices of foreign language teachers and the writings of several educational theorists seem to suggest that the most popular teaching methods currently in use are those which are derived from the two major learning theories—the audio-lingual habit theory and the cognitive code-learning theory.

Audio-lingual procedures are based on the mechanist approach to language learning postulated by the great descriptive linguist Leonard Bloomfield who attempted to explain language by reference to behaviourism. It is argued that since language is a habit structure, a system of skills, it should be taught by practice and repetition of oral drills and by the formation of stimulus-response associations.

Cognitive code-learning theory on the other hand attaches more importance to the learner's understanding of the structures of the foreign language than to his facility in using the structures, since it is believed that provided the learner has appropriate cognitive control over linguistic structures, facility will develop automatically with the use of language in meaningful situations. This theory rests in the main upon the neuro-psychological bases of thought and language and accords well with the views of contemporary linguists on the nature of language and how it is acquired.

Chomsky's linguistic theory, for instance, has so influenced present-day thinking about language learning that there has been a shift in emphasis in the teaching/learning process in the last few years with stress on the learning aspect now replacing the former pre-occupation with teaching. Pit Corder,[7] the well-known applied linguist, believes that this has shown itself as a renewed attack on the problem of the acquisition of the mother tongue which has inevitably led to consideration of the question whether there are any parallels between the processes of learning the mother tongue and learning a foreign language. It is my belief that at least some of the strategies by which the young native learner acquires linguistic competence can be used successfully by the second language learner.

Furthermore, the results I have obtained with an experimental class working on English speech rhythm indicate that the linguistic material used naturally by the learner during the early stages of language acquisition can be adapted successfully in the foreign language learning situation. Amusing these curriculum experiences may be, but if the native learner can enjoy the process of language acquisition and still achieve mastery why deny this pleasure to the foreign learner?

Appendix 1

Mean number of pauses and mean ratios of duration of pauses to duration of test item in 11 native speakers of English compared with the corresponding parameters in 11 non-native speakers of English.

Subject	Mean number of pauses		Mean pause/duration of item ratio	
	Native speaker	Non-native speaker	Native speaker	Non-native speaker
A	1.2	4.8	0.03	0.13
B	1.7	5.1	0.05	0.16
C	2.6	10.2	0.12	0.19
D	2.7	3.0	0.15	0.07
E	2.3	4.1	0.10	0.10
F	2.0	7.2	0.07	0.13
G	2.3	4.0	0.08	0.10
H	2.3	5.7	0.12	0.12
I	0.8	7.3	0.03	0.17
J	1.3	3.0	0.04	0.11
K	2.3	4.8	0.05	0.12

Analysis of variance—native and non-native speakers

$F = 26.8$ — Significant at $\alpha = .05$ ($P < .01$) — Upper limit $F\ [1,10] = 10.04$

$F = 7.87$ — Significant at $\alpha = .05$ ($P < .05$) — Upper limit $F\ [1,10] = 4.96$

Appendix 2

Results of Statistical Analysis

The reliability of adjudicators' ratings was determined by the method described by Ebel, Robert L., 'Estimation of the Reliability of Ratings', *Psychometrika*, Vol. 16. No. 4, 1951.

Reliability of individual ratings = 0.7827.
Reliability of average ratings = 0.9153.

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[7]Corder, S. Pit, 'Significance of Learners' Errors', *International Review of Applied Linguistics in Language Teaching*, Vol. V, 1967.

(1) By means of a paired t-test it was determined that the difference between CONTROL and EXPERIMENTAL groups on the PRE-TEST was not significant (at $\alpha = .05$).

(2) All subjects showed improved performance in the POST-TEST as compared with the PRE-TEST.

(3) The EXPERIMENTAL group improved twice as much as the CONTROL group. This difference in improvement is statistically significant at the 0.1 per cent level (at $\alpha = .05$). N.B. $P < .01$.

(4) The difference between EXPERIMENTAL and CONTROL groups in the POST-TEST is on the borderline of significance at the 5% level ($t = 2.08$ — $t_{14\ d.f.}$ at 5% level. $= 2.14$).

Means scores on pre- and post-tests for both groups:

Pre-test

$\bar{X}_C = 33.2$ $\bar{X}_E = 33.26$

Post-test

$\bar{X}_C = 38.4$ $\bar{X}_E = 43.73$

PRIORITIES FOR THE IMPROVEMENT OF TEACHING AND LEARNING AT THE TERTIARY LEVEL

ALLEN H. MILLER AND GRAHAM B. SMITH

ABSTRACT

A survey of student opinion on the quality of tertiary education was conducted among Diploma in Education students throughout Australia. At the time of writing replies were processed from 819 students, of whom 12 per cent have yet to complete their first degree and 81 per cent completed it during the last five years. Ninety-four per cent were full-time students.

The major part of the survey was designed to discover the features of tertiary education of which students are most critical and the reasons for their criticism. *Library and Counselling Services* were criticised more than other features of the university organisation and *Lecturing* was the teaching method most criticised.

The two commonest weaknesses in lectures are their *Lack of Relevance to Life* and the *Absence of Links with Practical Classes*. Lecturers were criticised strongly for their *Failure to Clarify Objectives*. While 62 per cent of students believe that they had the right number of lectures, a significant nine per cent would prefer no formal lectures in their undergraduate courses.

Tutorials were criticised by 68 per cent for being *Dominated by One or Two Individuals* and tutors for their *Failure to Structure their Tutorial Sessions*.

Laboratory classes were criticised because *Experiments do not Emphasise the Inquiry Approach* and demonstrators make *Insufficient Use of Educational Media*.

The final part of the survey sought opinions on assessment procedures and revealed a strong support for using a *Number of Short Essays*, or a combination of this with other forms of assessment.

INTRODUCTION

The need for improving the quality of teaching in universities and colleges is generally accepted by tertiary students and recent graduates, if not by all university or college staff. Academic staff attending tertiary teaching seminars at the Canberra College of Advanced Education sometimes give as their reason for attending a wish to avoid repeating the faults they observed in their own university teachers. Observations by the author of lecturers and tutors at work confirm that faults exist, but examples gained in this way are too small to be able to conclude which areas of teaching are in greatest need of improvement. Unless one is prepared to accept evidence from limited numbers of observations or to make *a priori* assumptions about what is wrong with tertiary teaching, one must seek more convincing evidence from a wider sample of the population.

Observations by experienced lecturers of others' work may show an individual bias due to preconceptions as to what criteria are valid for effective lecturing. Again the sample size is necessarily limited.

There is, however, one important group in the population who may be able to provide the type of evidence we are seeking, namely, senior students and recent graduates from Australian universities. The use of students and ex-students for evaluating teachers is justified by Remmers (1963, pp. 367-8), who reviews research evidence to that date and justifies student ratings on the following grounds:

1. Reliability of ratings is a function of the number of raters and it is relatively easy to obtain large numbers of student raters, thus increasing reliability greatly.
2. Student ratings show little evidence of being affected by the grades they receive, by the difficulty of the course, by the sex of the students or the teacher, or by the teacher's popularity.
3. Even when 10 years have elapsed since the teaching occurred, ex-students' ratings of teachers correlate highly with ratings by current students.
4. In a given college or university, wide and important departmental differences in teaching effectiveness are seen by students to exist.

Surveys of university teaching were conducted some years ago in Australia by the Australian Vice-Chancellors' Committee (1963) and by Schonell, Roe and Meddleton (1962). The Vice-Chancellors' Committee questioned heads of university departments throughout Australia whereas the Schonell study was based on information from students at the University of Queensland. Because the techniques used to elicit information from the Brisbane students varied from those used in the present study it is inadvisable to make detailed comparisons. Nevertheless the high criticism of counselling services (by 46 per cent of respondents) in the present study is supported by a similar percentage (65 per cent) of students who expressed worry about their studies during their courses at Brisbane. The authors of the earlier study also report repeated criticism of lecturing quality, which is borne out by the fact that lectures were strongly criticised by 67 per cent of the present group of students.

Brief descriptions of these and of similar surveys in the United Kingdom are included by Beard and Bligh in their *Research Into Teaching Methods in Higher Education* (3rd Ed. 1971, pp. 67-71). It is hoped that a further analysis of the figures in the present study will show whether the few differences between earlier studies and the present one are due to differences between institutions in Australia and Great Britain or to changes in teaching methods over the last decade.

A very convenient group of students, with at least three years' experience of tuition in a university is the large number of Diploma in Education students throughout Australia. An advantage of using such a group is that they and their lecturers generally appreciate the need for discovering where the greatest weaknesses in tertiary teaching are to be found, so that one can expect a high degree of co-operation. An obvious disadvantage is that such

a sample omits the important technical and professional faculties of Law, Medicine, Dentistry and Engineering.

Accordingly a letter was sent to most Australian institutions with Diploma in Education students, inviting their co-operation. This letter outlined the proposal and enclosed a sample copy of the questionnaire, which is also reproduced in Appendix 1. At the date of printing 819 completed surveys had come from nine different institutions.

DESCRIPTION OF THE SURVEY

The current study differs from usual course evaluations in that it seeks to evaluate more general aspects of university teaching rather than concentrate on the teaching in specific course or subject department. It is designed in such a way as to allow comparisons, if a sufficiently large sample is obtained, between the responses of full-time or part-time students and between students from different states or subject majors. The survey is divided into three parts:

(a) Personal data, including time since completing first degree, whether they were full- or part-time students, first degree at an overseas university or in an Australian state, and subjects in which they majored.

(b) A series of 13 items in which students were asked to rank features of tertiary education which need greatest improvement. This section included items dealing with organisational arrangements, overall teaching methods, lectures and lecturers, tutorials and tutors, and laboratory classes and demonstrators.

(c) Two items designed to find the most desirable methods of assessment.

SIZE AND DISTRIBUTION OF THE POPULATION

Table A shows the distribution and background of the Diploma in Education students used in the survey. All figures are percentages of the total responding to any item.

TABLE A

Time Since Completion

Incomplete	Less than 1 year ago	1-5 years ago	5-10 years ago	More than 10 years ago
12%	65%	16%	3%	4%

Full-time or Part-time First Degree

Full-time	Part-time
94%	6%

Place of Study

A.C.T.	N.S.W.	VIC.	QLD.	S.A.	TAS.	W.A.	OVERSEAS
7%	29%	4%	28%	5%	5%	18%	4%

Major Study

English	History	Foreign Languages	Economics	Mathematics	Physical Sciences
18%	19%	7%	8%	6%	5%
Biological Sciences	**Earth Sciences**	**Geography**	**Psychology**	**Philosophy**	**Agriculture**
7%	2%	9%	5%	1%	1%

Other (mainly Education or Political Science)
12%

INTERPRETATION OF RESULTS

Tables B-J in Appendix 2 show the percentages of students who rated each feature, from the one needing most improvement (Column 1) to the one needing least (Column 5). In this section an attempt will be made to give a general description of the results and to make some tentative interpretations.

Organisational Features

The results in Table B strongly suggest the need for improvement in each of the areas described. *Library Services* were rated one or two by 51 per cent of the students and *Counselling Services* were rated one or two by 46 per cent. Clearly further studies are needed to discover what features of counselling and library services are being criticised and whether these criticisms apply to particular states. Evidence from Schonell, et al. (1962), shows that 84 per cent of first year students, 51 per cent of second year and 37 per cent of third year or 65 per cent of all students experienced serious worries during their studies (p. 190), thus emphasising the need for further investigations in this area. For example, one would need to determine whether students are criticising course counselling or personal counselling services.

Teaching Methods

This part of the survey revealed a strong criticism of *Lectures* as a teaching method, at least in their present form. Sixty-seven per cent rated lectures one or two in their need for improvement. It is interesting however to compare this result with the answer to Item 7, in which 62 per cent of the students who were asked about the desirable number of lectures in a course voted for the number to remain about the same. Evidently the criticism is of the quantity rather than the quality of lectures. *Laboratory classes* evidently need least improvement, as only 19 per cent ranked them one or two compared with 57 per cent who ranked them four or five, but this result may have been influenced by the small number of science students in the sample. Opinions about *Tutorials, Essays and Assignments* and *Field Trips* were less certain, but the responses suggest the need for improvement in the order given.

Lectures

Four items stand out here. The two needing most improvement, with the percentage ranking them one or two, were *No Relevance to Real Issues of Life* (65 per cent) and *No Links between Lectures and Laboratory or Tutorial Classes* (55 per cent). The two which needed least improvement, with the percentage ranking them four or five were *Unsupported by References* (64 per cent) and *Irrelevance to Exam Topics* (53 per cent). Responses dealing with *Too Great a Dependence on Textbook* were fairly evenly spread.

The above evidence suggests that lectures tend to be theoretically and exam oriented. Insufficient use is made by lecturers of illustrations or applications, so that students fail to see either the relevance to life or the links between theoretical and practical aspects of the subject.

Lecturers

The greatest fault in lecturers is that they *Fail to Clarify their Objectives* (63 per cent one or two). Fifty-three per cent of respondents also gave a one or two rating to *Inability to Explain Subject Matter*, which is very likely a product of the first fault. Clearly lecturers do not suffer from *Inadequate Knowledge of Subject Matter* as only eight per cent ranked it one or two and 80 per cent ranked it four or five. Opinions on *Use of Media* and *Voice Production* were divided in the present study. This contrasts with the 44 per cent of British students who criticised lecturers for their poor delivery in the Hale Report (1964, p. 46).

Number of Lectures

It has already been reported that 62 per cent of students thought that they had received about the right number of lectures. It is significant, however, that nine per cent would be content with no formal lectures and 18 per cent would like fewer lectures. Only 11 per cent requested an increase in the number of lectures. Therefore if any change in the number of lectures is envisaged it should be a reduction. These figures are very close to the ones quoted in the 1964 Hale Report (p. 48) on British University teaching methods, but the reasons for criticising lecturers are significantly different.

Tutorials

A very high proportion, 86 per cent, criticised tutorials for being *Dominated by One or Two Individuals*. Two features of tutorials which were rated low in need for improvement were *Most Helpful to Weak Students* (56 per cent in four or five) and *Too Dependent on Students* (53 per cent in four or five). No conclusions can be reached about *More Helpful to Bright Students* or *Deal With Irrelevant Issues*.

Tutors

Tutorials were strongly criticised by 60 per cent for their *Lack of Structure*. Opinions were more evenly divided in other responses to this item. The results suggest need for improvement in the following order: *Lack of Structure; Insufficient Use of Media; Too Much Like Lectures; Insufficient Use of Student Papers; Unrelated to Lectures*. The lack of structure in tutorials is probably due to lack of clear objectives by the tutor, the fault most common in lecturers, and this allows domination of the group by one or two students.

Laboratory Classes

Questions dealing with laboratory classes and demonstrators were answered by a smaller number of students (40-42 per cent) due to the small number of science graduates in the initial sample. Nevertheless with replies from over 330 who had experienced laboratory classes it is possible to take some note of the results. Fifty-five per cent of these students severely criticised laboratory work for its *Failure to Emphasise an Inquiry Approach* but 49 per cent also criticised laboratory classes for being *Too Time Consuming*. As inquiry-oriented experiments are more time consuming than the more usual observations and verifications, one can only interpret the

above results as a criticism of the time wasted in the present type of practical classes.

Opinions were more divided on *Experiments Unrelated to Real Issues* and *Lab Work a Poor Substitute for Field Trips;* and there was little support for the claim that *Books are More Efficient Sources of Information and Skills.*

Demonstrators

Demonstrators were mainly criticised for their *Insufficient Use of Educational Media.* Fifty-seven per cent of those who answered the item ranked this feature first or second, and 51 per cent ranked *Lab Poorly Organised* first or second. Opinions were much more divided on *Lab Work Unrelated to Lectures, Too Much is Done for the Student* and *Too Little is Done for the Student.*

The above main criticisms of demonstrators appear to rise from a lack of preparation, which could in turn be related to lack of clear ideas on the purpose of laboratory classes.

Preferred Forms of Assessment

Students were asked to rank a list of 10 types of assessment in order of their preference. The very large proportion of 38 per cent placed *A Number of Short Essays* first in their preference and 17 per cent placed it second. Other types of assessment favoured by students, with the percentage ranking them first and second, were *End of Term (or Semester) Written Exam with Equal Essays and Objective Test Items* (23 per cent, 13 per cent), *Short Tests Every Two or Three Weeks* (nine per cent, 15 per cent), and *One Long Essay or Thesis* (five per cent, 13 per cent). All forms of *End of Year Exams* were ranked low. The preference for essays by this sample may need checking considering the predominance of students from the humanities and social sciences. A later analysis will examine the preferences of those who were enrolled in science faculties.

Despite the clear preference for a number of short essays as the most desirable form of assessment, 93 per cent of the students selected a combination of assessment techniques when given the chance. The most favourable combinations are the following:

Essays plus *Term Exams*
Essays plus *Tut/Lab Performance*
Essays plus *Term Exams* plus *Tut/Lab Performance*
Essays plus *Oral Exam* plus *Tut/Lab Performance*

The above results tend to confirm the desirability of present moves towards continuous assessment in a number of tertiary institutions.

OPEN-ENDED INVITATION

The results of this survey which have been described above tell only part of the story. The questionnaire also gave opportunities for students to make written comments in response to open-ended invitations such as: *If there is some other general feature of tertiary education not listed in the previous two questions which in your opinion needs considerable improvement, briefly describe it here.*

As was to be expected, the percentage of students responding to these open-ended invitations was relatively small, nevertheless 25 per cent made reference to the need for greater interaction between staff and students in some form or other, 17 per cent referred to the need for improving assessment techniques, and nine per cent said that the whole course structure needs attention.

There were insufficient responses to other open-ended invitations in the initial sample to warrant a detailed analysis but the comments of individuals make interesting reading.

SOME TENTATIVE CONCLUSIONS

1. Staff-Student Interaction

The fact that so many students criticised existing counselling services, together with their comments about the need for better relationships between staff and students, points to a weakness in our present system of large and in many cases, impersonal universities. The strong criticism of lectures, compared with little criticism of tutorials or laboratory classes, also suggests the need for more staff-student interaction, which is more likely to occur in the two last-named methods of teaching. It is pleasing to note the report by Beard and Bligh (1971, p. 66) that Bligh has modified the Flanders' Interaction Technique for the assessment of small group teaching in higher education and Wragg used the Flanders technique to evaluate lectures. Later studies comparing institutions which emphasise tutorial methods with those which emphasise lecturing to large groups, may provide further evidence on whether the increased cost of small group teaching is justified.

2. Course Planning

The strong criticism of lecturers for failing to clarify their objectives, the fact that tutorials are seen to lack structure and may be dominated by one or two individuals and the claim that demonstrators make insufficient use of educational media are all indicative of inadequate planning by university teachers. Similar criticisms emerge from the 1963 report of the Australian Vice-Chancellors' Committee (p. 165) in which heads of university departments were confused about the purpose of lectures and tutorials. Beard and Bligh (1971, p. 4) mention the work of Walton and Drewery who discovered that one university department may not have a range of widely differing aims and objectives in practice from what they may theoretically support. Beard and Bligh point out the need for considerable staff discussion which is directed towards a clear formulation of course objectives. Whether it is possible for these to be stated always in behavioural terms has been argued in the pages of the *Australian Journal of Education* by Stanton (1970) and Hogben (1970) and will not be discussed here.

3. Assessment

Examination systems and assessment in general were mentioned as a major problem by 17 per cent of those responding to the open-ended invitation concerning need for improvement in tertiary education. Consequently the section dealing with preferred types of assessment becomes an important one. The relationship between clear specification of course objectives and

requirements for satisfactory progress in a course has been mentioned by many authors (e.g. Stanton, 1970; Dawes, 1969; Miller, 1972, p. 184), and an important part of all tertiary teaching courses at Canberra has been to encourage participants to specify their objectives in such a way that students have no doubt about what is required of them if they are to pass in a course. At this stage very few lecturers appear to have reached the next stage of being able to specify clearly what is necessary for higher grades of pass such as Credit or Distinction.

Students' choices in the sections of the questionnaire dealing specifically with assessment make it very clear that there is a strong preference for those forms of assessment which are usually associated with continuous assessment, namely short essays, marks for performance in tutorial and laboratory sessions, possibly supplemented by term examinations and oral examinations where appropriate.

4. Relevance of University Courses

Lack of relevance was mentioned in at least three places in the survey. Lectures were criticised by 65 per cent of the respondents for their failure to relate to the real issues of life. This is a serious criticism particularly if it can be shown to be true of other tertiary institutions such as Colleges of Advanced Education and Institutes of Technology who stress the applied nature of their courses. Recent newspaper criticisms of medical courses have been of a similar type, claiming that these are more directed to the preparation of medical research workers than of general practitioners.

The second lack of relevance which emerged from the survey was the criticism of lectures by 55 per cent of students for the lack of links between lecture and laboratory or tutorial work. Apparently some institutions make no effort to link the various strands of the one course, which is more evidence for lack of thorough planning.

Laboratory work which does not emphasise an inquiry approach not only fails to achieve a frequently stated aim of laboratory classes, it shows a lack of relevance to the real function of laboratories in research and in industry. An inquiry approach in laboratory teaching demands from students thinking at the highest of Bloom's cognitive levels, the evaluative level, whereas many practical classes as organised at present demand much lower levels of thinking together with certain manipulative skills.

The survey described in this paper was designed to find out which of the common criticisms of university teaching appear to be most applicable to present-day Australian universities. Courses are criticised for their lack of relevance and university teachers for their inadequate statements of objectives and the subsequent effect on assessment. Current assessment procedures evidently need to be changed towards a greater use of short essays and assignments by means of which students' work may be continuously assessed.

The other need for improvement is in the amount of interaction between staff and students. As reported earlier, research is proceeding on ways of measuring the amount of interaction in lectures and tutorials. Further

studies are needed, to determine not only more effective ways of increasing interaction but also optimum sizes of tertiary classes and institutions.

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Appendix 1

CANBERRA COLLEGE OF ADVANCED EDUCATION
SCHOOL OF TEACHER EDUCATION
SURVEY OF TERTIARY EDUCATION

The primary aim of this survey is to discover which aspects of tertiary education are in greatest need of improvement. A secondary aim is to see whether any of the weaknesses revealed are confined to isolated faculties or departments.

Personal Data:

Indicate the appropriate category by a tick (√).

A. How long since you completed your first degree?
- Incomplete ( )
- Last year ( )
- 1-5 years ago ( )
- 5-10 years ago ( )
- More than 10 years ago ( )

B. While studying for your first degree were you mainly a full-time or a part-time student?
- Full time ( )
- Part time ( )

C. Where did you receive the major portion of your tertiary education?
- A.C.T. ( )
- N.S.W. ( )
- Vic. ( )
- Qld. ( )
- S.A. ( )
- Tas. ( )
- W.A. ( )
- Overseas ( )

D. Indicate the subject or subjects in which you majored for your first degree.
- English ( )
- History ( )
- Foreign Languages ( )
- Economics ( )
- Mathematics ( )
- Physical Sciences ( )
- Biological Sciences ( )
- Earth Sciences ( )
- Geography ( )

Psychology ( )
Philosophy ( )
Agriculture ( )
Other ..... ( )

Opinions:

1. From your experiences as an undergraduate in tertiary education indicate by the number (1) the organisational feature of tertiary institutions where the greatest improvement is required and by (5) the feature which in your opinion needs least improvement. Then place the numbers (2) to (4) in appropriate places next to the other categories.
   - Classroom accommodation ( )
   - Counselling services ( )
   - Course entrance requirements ( )
   - Library services ( )
   - Provision for 'extra-curricular' activities ( )
2. Rank the following teaching methods in a similar way, the one which from your experience needs the greatest improvement being marked (1) again.
   - Essays and assignments ( )
   - Field trips ( )
   - Laboratory classes ( )
   - Lectures ( )
   - Tutorials ( )
3. If there is some other general feature of tertiary education not listed in the previous two questions which in your opinion needs considerable improvement, briefly describe it here.

   .....

   .....
4. Rank the faults which have been most prevalent in the lectures you have attended, using the same system as in questions 1 and 2.
   - Absence of links between lectures and laboratory or tutorial classes ( )
   - Irrelevance to examination topics ( )
   - Lack of relevance to real issues of life ( )
   - Too great a dependence on the textbook ( )
   - Unsupported by references ( )
5. Rank the faults you have encountered in lecturers.
   - Inability to explain subject matter ( )
   - Inadequate knowledge of subject matter ( )
   - Objectives not clarified ( )
   - Poor use of educational media ( )
   - Poor voice production ( )
6. Write down any other common weakness you found among lecturers or in lectures.

   .....

   .....
7. Do you think the number of lectures in your course should have been greater or less than you had. (Tick the selected response.)
   - The course should have no formal lectures ( )
   - There should be fewer lectures than I had ( )
   - I had about the right number of lectures ( )
   - There should be more lectures than I had ( )

NOTE: (If you have never experienced tutorials as an undergraduate omit questions 8-10.)

8. Rank the following descriptions of tutorials scoring (1) for the description which in your opinion represents the greatest weakness in tutorials and (5) for the description which is either the least weakness or the greatest strength.
   - Tutorials are most helpful to bright students ( )
   - Tutorials are most helpful to weak students ( )
   - They tend to be dominated by one or two individuals ( )
   - They tend to deal with irrelevant issues ( )
   - They are too dependent on the students ( )
9. Rank the faults you have encountered among tutors.
   - Insufficient use of educational media ( )
   - Insufficient use of papers prepared by students ( )

Tutorials lack structure ( )
Tutorials too much like lectures ( )
Tutorials are unrelated to lectures ( )

10. Write down any other common weakness you have found in tutorials or in tutors.

NOTE: (If you do not have direct experience of laboratory classes in a tertiary institution, omit questions 11-13.)

11. Rank the following descriptions of laboratory classes scoring (1) for the description which in your opinion represents the greatest weakness in laboratory classes and (5) for the description which is either the least weakness or the greatest strength.
Books would be more efficient sources of information and skills ( )
Experiments unrelated to real issues ( )
Experiments do not emphasise inquiry approach (3
Poor substitute for field trips ( )
Too time consuming ( )

12. Rank the faults you have found among demonstrators.
Insufficient use of educational media ( )
Not enough is done for the students ( )
Laboratory is poorly organised ( )
Too much is done for the students ( )
Lab work unrelated to lectures ( )

13. Write down any other common weaknesses you have found in laboratory classes or demonstrators.

14. If an undergraduate course has to be assessed by one of the following methods, which form of assessment do you prefer? Use (1) for the most preferred and (10) for the least preferred, ranking the others in order of preference.
End of year written exam. mainly essays ( )
End of year written exam. mainly objective test items ( )
End of year written exam. equally essays and objective test items ( )
End of term (or semester) written exam. mainly essays ( )
End of term (or semester) written exam. mainly objective test items ( )
End of term (or semester) written exam. equally essays and objective test items ( )
One long essay or thesis ( )
Short tests every two or three weeks ( )
A number of short essays ( )
Pass or fail solely based on satisfactory attendance ( )

15. If a combination of testing methods is to be used, which is the most preferable? Indicate your preference by ticking the methods which should be used in the combination.
Yearly exam ( )
Thesis ( )
Essays ( )
Term (or semester) exams ( )
Frequent tests ( )
Performance in tutorials or laboratories ( )
Oral exam (viva) ( )

APPENDIX 2

RESULTS OF SURVEY—DETAILS OF RANKING

TABLE B

Organisational Feature (96% Response)	1	2	3	4	5	No Response
Library Services	27	24	18	16	13	2
Counselling Services	25	21	24	19	9	1
Classroom Accommodation	19	19	16	19	25	1
Course Entrance Requirements	14	17	19	26	22	2
Extra-curricular Activities	14	17	18	17	32	2

TABLE C

Teaching Methods (97% Response)	1	2	3	4	5	No Response
Lectures	43	24	15	11	7	1
Tutorials	26	29	22	11	12	1
Essays and Assignments	14	23	31	17	14	1
Field Trips	11	11	13	29	29	7
Laboratory Classes	6	13	17	26	31	8

TABLE D

Lectures (93% Response)						
No Relevance to Life	42	23	17	9	7	3
No Links with Labs or Tutes	29	26	18	14	9	3
Too Great Dependence on Text	15	21	21	23	15	4
Irrelevance to Exam Topics	8	14	20	22	31	4
Unsupported by References	4	11	17	26	38	4

TABLE E

Lecturers (96% Response)						
Objectives not Clarified	36	27	20	13	2	2
Inability to Explain Subject	28	25	22	17	6	2
Poor Use of Educational Media	25	24	25	17	7	2
Poor Voice Production	9	17	21	27	24	2
Inadequate Knowledge of Subject	2	6	9	22	58	3

TABLE F

Tutorials (90% Response)						
Dominated by Individuals	68	18	7	3	2	1
Most Helpful to Bright Students	10	29	22	18	14	7
Deal with Irrelevant Issues	11	24	23	24	13	7
Too Dependent on Students	7	14	19	19	34	6
Most Helpful to Weak Students	5	10	21	26	30	8

TABLE G

Tutors (89% Response)						
Tutorials Lack Structure	39	21	16	13	9	3
Insufficient Use of Media	21	24	22	15	14	3
Tutorials too like Lectures	23	16	14	22	21	5
Insufficient Use of Student Papers	9	18	25	24	19	5
Unrelated to Lectures	7	17	17	19	35	5

TABLE H

Laboratory Classes (42% Response)						
Experiments do not Emphasise Inquiry Approach	37	18	16	14	11	3
Too Time Consuming	29	20	19	14	14	4
Unrelated to Real Issues	14	26	22	23	12	3
Poor Substitute for Field Trips	10	23	21	23	19	4
Books More Efficient Sources of Information and Skills	8	10	15	21	41	4

TABLE I

Demonstrators (40% Response)						
Insufficient Use of Media	31	26	18	14	8	3
Lab Poorly Organised	24	27	22	15	10	3
Lab Unrelated to Lectures	21	17	20	18	21	4
Not Enough Done for Students	15	17	23	22	19	4
Too Much Done for Students	8	9	12	23	43	4

TABLE J

Preferred Forms of Assessment (93% Response)	1	2	3	4	5	6	7	8	9	10
Number of Short Essays	38	17	9	7	7	5	5	6	3	4
End of Term Exam Using Essays and Objective	23	13	14	15	14	7	3	2	2	6
Short Tests Every 2-3 Weeks	9	15	14	9	8	7	7	8	11	11
End of Term Exam—Essays	8	11	15	15	15	12	11	4	2	6
One Long Essay or Thesis	5	13	11	9	6	8	6	8	18	15
End of Term Exam—Objective	4	10	14	15	16	15	8	8	4	7
End of Year Exam—Essays and Objective	3	5	6	11	11	15	20	17	5	7
End of Year Exam—Essays	2	3	5	7	7	8	11	17	18	21
End of Year Exam—Objective	1	2	4	3	7	10	17	21	21	14
Pass or Fail on Attendance	5	7	5	3	4	5	4	3	8	55

ARCHITECTURAL DESIGN AND THE TERTIARY EDUCATIONAL PROCESS

A. J. LONSDALE

INTRODUCTION

The major characteristic of educational practice in the 1970s is change. Old practices are challenged and modified, new practices and procedures are developed, and the rate at which these events occur is continually increasing.

A variety of educational, psychological, sociological and, lately, political forces are providing the impetus for change in education. So far as pedagogical change is concerned, two of the more important casual influences are a re-definition or a clearer perception of the purposes and objectives of education, and an increasing awareness of a number of the more generally accepted principles of learning.

This paper is concerned with one aspect of the consequences of change—the need for educational architecture to reflect not only existing methods of teaching and learning, but also new approaches which are developing, and to be able to accommodate methods which are unanticipated at the moment, but which will occur in the future. Although the paper is specifically concerned with one aspect of the tertiary educational process, the discussion is appropriate in any area, or at any level of education.

The rate of change in educational practice is probably faster in primary and secondary than in tertiary education. Basically, the issues and principles which are receiving attention in primary and secondary education are equally appropriate in tertiary education. What are some of these emerging issues and principles, and what implications do they have for architectural design?

A number of basic principles of learning theory which now find general support underlie these changes. Among the more significant are:

—The importance of activity in learning, of feedback to the learner concerning the rate and extent of his learning, and the fact that different people learn in different ways and at different rates. The upsurge in various forms of programmed or individualized learning is, at least in part, a result of the acceptance of these principles.

—The recognition that students can learn from each other, and that learning to do this and to work with other people is an important objective in its own right.

—An increasing acceptance of the importance of the development of problem solving skills and creativity, leading to a variety of new approaches to educational practice such as project centred and discovery learning methods.

These changes are manifested through such examples as:

—new approaches to curriculum design in primary education (Australian Science Education Project) and in secondary education (P.S.S.C., Chem. Study, social studies projects,

—the individualization of learning through the use of educational media,

—the changing role of the library (or resource centre), with the development of the concept of the Library-College which is seen as the centre for the major portion of the learning activities,

—the development, in primary and secondary education, of various forms of team teaching.

These developments have implications for the design of educational buildings. In primary education in particular, perhaps the most significant response has been the development of open area schools. In secondary education they are reflected by faculty or activity-centred approaches to school design. To date, in this country, the impact has not been so strongly felt in the design of tertiary educational buildings, which are, in the main, traditional in style, based on the concept of the lecture theatre.

In tertiary education, the application of these principles leads to, for example, a questioning of the role of lectures, a re-evaluation of the manner in which small group teaching is conducted and a searching for means by which individual learning can be effectively facilitated. These may result in such consequences as new approaches to the design of lecture theatres, or even a questioning of the necessity for lecture theatres at all, and the development of a variety of individualized learning programmes and materials which include audio-tutorial methods, and library study carrels equipped with television, slides, tapes and other materials.

A considerable proportion of tertiary instruction occurs through what is commonly called the lecture-tutorial approach—utilising lecture theatres seating up to several hundred students, and tutorial or seminar rooms seating of the order of 12 students.

In the small group situation involving between eight and 16 students, the application of a number of the learning principles mentioned earlier leads to the possibility of a wide variety of learning arrangements, as illustrated in Figure 1.

These may vary from teacher centred exposition or group discussion, to various forms of student centred discussion, problem solving or other forms of activity in which the teacher plays either a more marginal or supporting role, or may not even be present. Frequently however, because of the arrangements and nature of the furniture (for example, a single, oval shaped seminar table) or the size, shape or acoustical properties of the room, many of these learning strategies may not be possible. Despite this, within the one or two hour sessions usually allocated for this purpose a reasonable amount of flexibility is normally available to the teacher.

This however assumes that the small group situation is appropriate for the purpose at that time. For most non-laboratory/workshop/studio based subjects in tertiary education, it is generally assumed that some combination of large group (lectures) and small group (seminars/tutorials) instruction is appropriate. The ratio of lecture time to tutorial time, and the temporal sequencing of these for a particular subject is generally the result of an interaction between a pre-determined conception of the manner in which

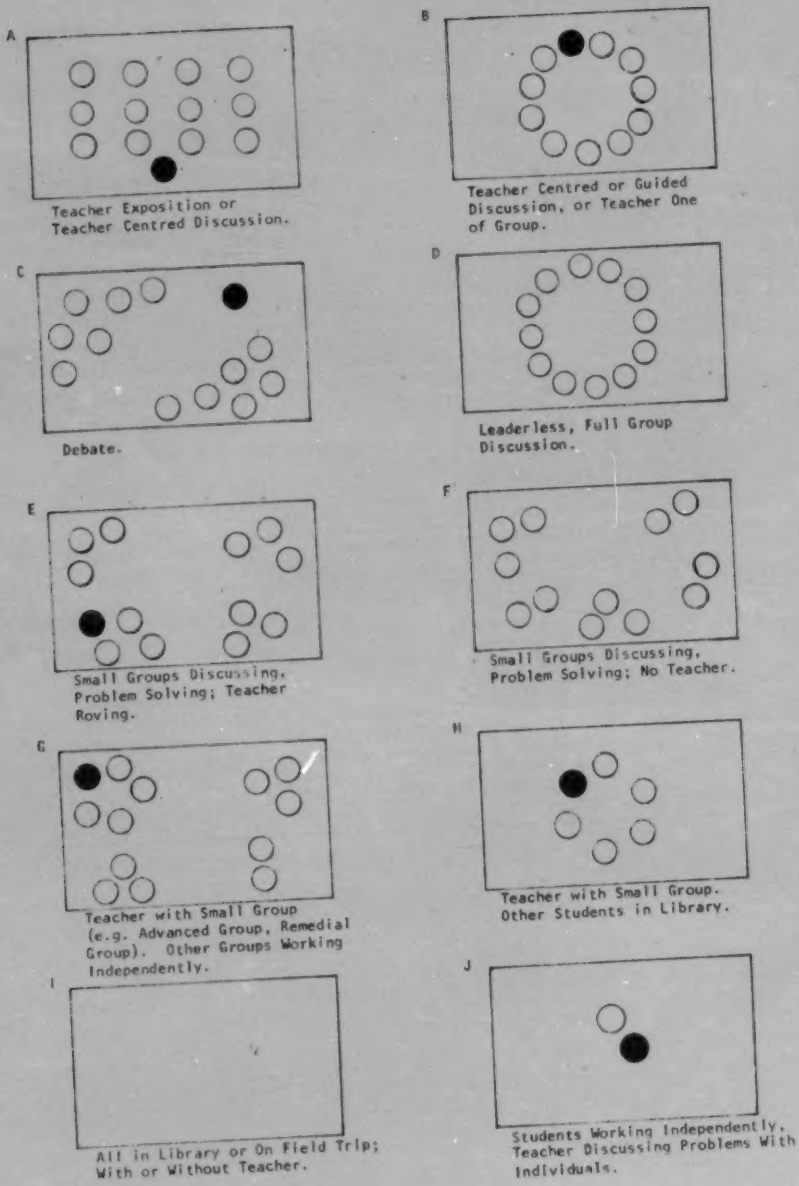

A
Teacher Exposition or Teacher Centred Discussion.
B
Teacher Centred or Guided Discussion, or Teacher One of Group.
C
Debate.
D
Leaderless, Full Group Discussion.
E
Small Groups Discussing, Problem Solving; Teacher Roving.
F
Small Groups Discussing, Problem Solving; No Teacher.
G
Teacher with Small Group (e.g. Advanced Group, Remedial Group). Other Groups Working Independently.
H
Teacher with Small Group. Other Students in Library.
I
All in Library or On Field Trip; With or Without Teacher.
J
Students Working Independently, Teacher Discussing Problems With Individuals.

FIGURE 1. SOME ARRANGEMENTS FOR LEARNING IN SMALL GROUPS.

the subject is to be taught, the availability of appropriate lecture theatres and seminar rooms, and other timetable constraints.

BACKGROUND TO THE EXPERIMENT

These problems were discussed at a seminar conducted jointly by the Department of General Studies and the Educational Development Unit at the Western Australian Institute of Technology late in 1970. At the seminar, concern was expressed about the constraints imposed by fixed timetables and the inflexible architectural arrangement of classrooms. It was recognised that the teaching method used at a particular time should depend on the task to be achieved rather than on the size of the group or the nature of the room, and that there are frequently occasions when it would be more appropriate to use small group discussions or similar techniques when a lecture is timetabled, or, alternatively, it may be desirable to show a film, hold a brief lecture or organise some other form of large group activity at a period when tutorial sessions are timetabled in small rooms. When a large open teaching space became available, arrangements were made for the mounting of a teaching experiment during 1972 to explore the value of using this open space in a subject which normally used the traditional lecture-tutorial system, in lecture theatres and tutorial rooms.

The basic aims of the project were:

—To compare the effectiveness of a small-group student-centred teaching approach with the traditional teacher-centred lecture-tutorial approach.

—To examine the advantages and/or disadvantages of using a large open space as contrasted with the more usual lecture theatres and classrooms.

All full-time students in the subject Organisations 200 were involved in the project, either in an experimental group or a control group. These students were drawn from a number of courses, as follows:

Department of Accounting and Business Studies.
(Associateship in Accounting, and Associateship in Secretarial and Administrative Practice.)

Department of Administrative Studies.
(Associateship in Administration.)

Department of Library Studies.
(Associateship in Library Studies.)
(Included some post-graduate Diploma in Library Studies students.)

Department of Computing and Data Processing.
(Associateship in Information Processing.)

To fully understand the conduct of the teaching experiment, an appreciation of the nature and objectives of the subject Organisations 200 is necessary. Several meetings of the teaching staff were held, late in 1971, in order to clarify these objectives. They were seen to fall into three categories:

- *Knowledge and Understanding*
  A knowledge and understanding of the structures, functions and operating principles of organisations, and the roles of individuals in organisations with the intention that students would use this understanding in later work.

—*Skills*

These are of two types.

Research Skills. The selection and use of information; the use of personal, interpersonal and institutional resources.

Communication Skills. Skills of reading, discussing, report writing, the presentation of findings and effective group membership.

—*Attitudes and Values*

A realisation of the importance of management in the running of organisations.

An appreciation of the costs and benefits of having organisations and being an organisation member.

Positive attitudes leading to further self development and learning.

The basic hypothesis underlying the teaching experiment was that the experimental teaching method utilising a large open space would result in an improved quality of teaching and learning without increasing cost.

An experimental design utilising a control and experimental group was used, and specifically the experiment aimed to find out whether there was any difference between these groups on the criteria:

—Student achievement and performance as related to the objectives of the subject, as indicated by assessment results, and the measurement of student attitudes concerning organisations.

—Student attitudes towards and opinions concerning the teaching and learning procedures.

—The work load, satisfaction, reservations and general subjective judgements of the teaching staff involved.

EXPERIMENTAL DESIGN

Basic Design

In the normal teaching situation it is virtually impossible to set up a sophisticated experimental design in which all variables may be controlled and/or accounted for. Problems of timetabling, allocation of students into control or experimental groups, availability of staff and the fact that students taking this subject were drawn from a variety of courses, each of which was associated with different methods of selection, expectations, departmental climates, etc., all militated against a tight experimental design.

The experiment involved a comparison between a control and an experimental group. Details of these groups are shown in Tables 1 and 2.

Table 1: EXPERIMENTAL DESIGN

		Student Group	
		Group A ('Experimental')	Group B ('Control')
Teaching Programme	Semester I	Experimental	Traditional
	Semester II	Experimental	Experimental

Table 2: COMPOSITION OF STUDENT GROUPS

Department	Student Group	
	Group A ('Experimental') No. of Students	Group B ('Control') No. of Students
Acc. & B/S Admin.	81 15 } —96	40 11 } —51
Lib. Stud.	—	17
C. & D.P.	—	15
Other	—	1
TOTALS	96	84

Timetabling, class grouping, enrolment procedures and other constraints made random sampling of the control and experimental groups impossible. The actual composition of the treatment groups is shown in Table 2. Accounting and Business Studies, and Administrative Studies students were allocated to the control and experimental groups according to their sequence of enrolment, and the main statistical analysis involved a comparison of these students.

Previous examination performance was used to check comparability of groups, and this analysis indicated that on the basis of 1971 examination performance in relevant areas the groups could be considered to be equivalent.

THE TEACHING AREA

The area utilised was approximately 2000 square feet as shown in Figure 2.

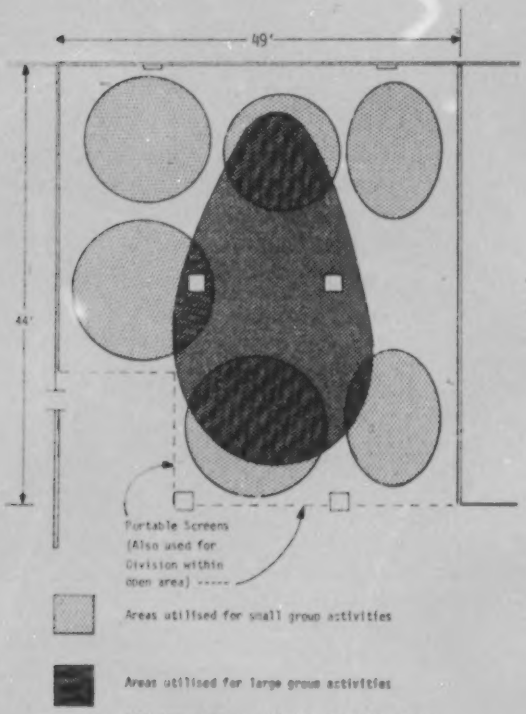
It formed part of a larger area on a floor of the new library building intended ultimately for use as a book stack and student reading area. The standard planning formula for tutorial rooms is 20 square feet per student place, which makes this area equivalent to 100 student places (for individual table-chair furniture arrangement). In fact, student groups of 90-100 were accommodated in the area during 'lecture' sessions.

It was calculated that six tutorial groups of approximately 16 students could operate simultaneously, as indicated on the sketch plan, or that, when it was necessary to collect the whole group together for the purpose of an address, mini-lecture, film, etc., this could be done in the manner shown. In a conventional arrangement of six 16-seat tutorial rooms, additional area would be required for passage access and related services. Although this area would depend very largely on the overall building design, for six tutorial rooms an absolute minimum of approximately an additional 350 square feet would be required, and, based on present campus buildings, this figure would probably be greater than 600 square feet, or 100 square feet per tutorial room. Accordingly, apart from any benefits in terms of improved teaching and learning, it was clear that if this method could be shown to be effective it could result in a very substantial space saving, with a consequent reduction in the capital cost of building.

THE TEACHING AREA

The area utilised was approximately 2,000 sq. ft. as shown in Figure 2.

It formed part of a larger area on a floor of the new library building intended ultimately for use as a book stack and student reading area. The standard planning formula for tutorial rooms is 20 sq. ft. per student place, which makes this area equivalent to 100 student places (for individual table-chair furniture arrangement). In fact, student groups of 90 - 100 were accommodated in the area during "lecture" sessions.



TOTAL AREA UTILISED - APPROXIMATELY 2000 sq. ft.
FIGURE 2: Sketch plan of open area.

TEACHING-LEARNING METHODS

The area was used in a variety of ways ranging from individual student learning activities to total group lecture presentations. Weekly meetings of the teaching team were held to discuss details of the teaching programme for future sessions and to evaluate sessions held in the previous week. The usual procedure followed was a consideration of the objectives of future topics in the teaching programme, and the detailed planning of the activities to be used; one member of the teaching team assumed overall responsibility for this planning and co-ordination.

The control group followed a programme designed on 'traditional' lecture/tutorial lines with the lectures following a schedule of topics which had been given to the students at the beginning of the year. Tutorials generally were based on a tutor-centred discussion of a question or case

study for which students were expected to prepare in advance. Normal lecture and tutorial rooms were used by the control group.

For the experimental group, in planning the details of each week's programme the following pedagogical principles were utilised:

(i) **Activity**

The emphasis was placed on *active* student learning, with the aim of involving *all* students as fully as possible in all activities. Students were expected to bear greater responsibility for their own learning and the direction of learning activities.

(ii) **Flexibility**

(a) Activities were varied from week to week and also within the two hourly or hourly sessions, to meet the needs of the particular topic.

(b) The size of groups engaging in activities was varied. Various combinations were used, such as:

—Three to four students for discussion topics, preparation of written reports.

—Five to six or 10-12 students for simulation games and other exercises.

—Fifteen to 20 students (whole tutorial group) for presentation of reports, tutor guided work, etc.

—Forty, 60 or 100 students for 'mini-lectures', formal one-hour lectures and films.

(iii) **Reality**

Wherever possible, exercises, games and projects were used to allow students to experience the concepts being taught. As this subject is concerned with organisational principles and human behaviour in organisations, it lent itself very well to these types of activity.

RESULTS AND OBSERVATIONS

An evaluation of the effectiveness of the open area and of the teaching-learning procedures utilised was based on an overall consideration of data in the form of examination results, student opinion questionnaires, measurement of student attitudes, reports by and discussions with the members of the teaching team, and observations made by the author. Those of significance to this paper are concerned with the operation of the open teaching area and its interaction with the teaching-learning methods employed, and with the perceptions, attitudes and skills of the teaching team.

(i) **Teaching-Learning Methods and Their Outcomes**

In terms of examination results and related measures, it was found that the experimental treatment produced results which were slightly superior. These difference were not however statistically significant.

The following generalisations may be made concerning student reactions to their learning experience in the open area.

(a) Relevance of the subject. Under the experimental treatment, significantly more students considered the subject to be relevant to the rest of their course. Use of the open area and team teaching

approach enabled the design of individual and group exercises which were realistic and related to real life problems and situations. It is notable also that the areas of the subject for which the students indicated the greatest degree of interest were those in which various forms of group and individual activity exercises were used.

(b) In terms of freedom to guide or control the learning experience, students in the traditional groups who experienced, in the main, teacher centred learning activities expressed a preference for activities and forms of organisation which placed greater emphasis on the learner rather than the tutor. Conversely, students in the experimental situation, who experienced considerably more freedom and on many occasions were left entirely on their own, expressed a preference for more tutor guidance.

(c) The variety of activities used in the experimental situation was strongly supported by students.

(d) Compared with the control treatment, students in the experimental group considered that the teaching methods had encouraged independence of thought, and that there had been more effective communication between tutors and students.

Staff involved in the exercise were generally happy with its outcome. It was felt that there was a higher degree of student interest, and that this was due to the variation in activities and lecturers, the use of individual and small group activities, and the responsibility placed on students for their own work. Students found the work to be more interesting and enjoyable, experimental groups were more cohesive and supportive of the tutor, and there were gains in terms of student attitudes, personal relationships, individual communication skills and self confidence.

The experimental approach ensured much greater contact between those staff involved in teaching the subject, particularly those from different departments, and this was felt to be highly desirable.

(ii) **Use of the Open Area**

The use of the open teaching space was felt to be of value. This was not so much because of the flexibility in teaching it afforded, but because, as one team member expressed it, of the atmosphere of 'working togetherness'. Staff new to teaching found support in teaching in the same area as more experienced teachers and could observe the teaching model displayed by them; the general atmosphere of activity provided an incentive to both students and staff in individual groups. This applied especially when learning tasks were somewhat unusual—to know that others nearby were similarly engaged was supporting and encouraging. Further, as stated by one team member, 'teaching in a classroom can be a lonely job'.

Staff and students involved in the experiment were pleasantly surprised at the ease of operation of the open area. Despite the fact that the area utilised was not designed for this purpose and might be

considered to have a number of characteristics which would be most undesirable if used in this way, its operation was felt to be quite satisfactory. Mobile display screens were available to act as dividers between areas. Some groups found their use entirely unnecessary, others found them to be very desirable and used them extensively.

In terms of noise, the adequacy of the area depended on the manner in which the various smaller groups were operating. When students operated either individually or in very small leaderless groups the area was characterised by an overall working buzz of conversation, but students did not appear to be distracted by nearby groups. When the area was used for several simultaneous tutorial group activities, the degree of distraction depended on the nature of the activity and the form of the seating. If the students in a tutorial were seated at individual tables in a large circle, and the teaching consisted largely of the tutor's presentation from the chalkboard, then individual tutors were forced to speak comparatively loudly with resulting distraction to nearby groups. If, however, student tables were pushed together into a compact unit, and the activity was largely one of discussion involving tutor and students the problem was substantially decreased.

THE TEAM TEACHING APPROACH

In the initial stages of the experiment, the teaching-learning procedures were planned in considerable detail. Some members of the team felt that the resulting need to follow a closely detailed programme exerted a limiting influence on their individual freedom to determine their own teaching strategies. In the conventional two-hour tutorial session, the tutor usually has virtually complete freedom to determine the procedures followed; in the experimental situation the same tutor might have to follow a pre-arranged programme in which his freedom might be restricted. Although all members of the team participated in the planning meetings, the overall consensus concerning the details of a session may not have been entirely satisfactory to an individual. In a group decision-making situation such as this, pressure to conform can be quite strong.

Of relevance to this observation is the relationship between a person's personality and perception of his role as a teacher, and the degree of comfort and satisfaction he obtains in particular teaching situations. Some teachers are happy for a teaching team to determine the procedures to be used by the individual teacher, and to play the role of a participant and resource person in the learning situation, rather than acting in a more authoritative teaching or information-presenting role. This may be because they believe that a group decision is inherently better, and that students should be consulted and greater responsibilities placed on them concerning their own learning. An alternative possibility is that they find it easier, as they are required to make fewer individual decisions, and can rely on the group to do a proportion of their thinking for them. Others feel a distinct responsibility for the activities occurring within a group of students for whom they are personally responsible, and wish to closely control the teaching activities within that group. The result is that for a variety of legitimate personality and social reasons, some teachers may operate more effectively in this

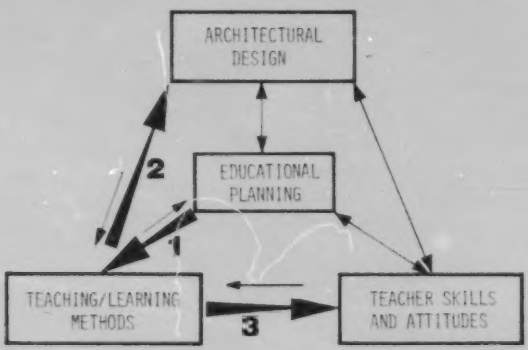
team teaching/experimental type situation, whereas others may operate more effectively in a situation where they are more independent, and have the opportunity to exert greater individual authority concerning the teaching and learning procedures for a particular student group.

For those contemplating the use of this type of team teaching, a consideration of these factors is important when participant staff are being selected. Staff need to be made aware of the limitations participation in such a programme may force upon them, and should be adequately prepared for the rather substantial change which a method such as this represents from traditional methods of teaching.

During the second semester, modifications were made to this system of organisation so that each member of the team assumed responsibility for a section of the course and arranged the overall programme for that topic. They also delivered lectures where appropriate and prepared discussion questions and other learning materials. Individual tutors had considerably more freedom in determining learning methods to be used with their particular groups. This arrangement however did result in less inter-group interaction and fewer activities in which all groups in a particular teaching session were involved.

CONCLUSION—A MODEL FOR EDUCATIONAL PLANNING

The results of this teaching experiment indicate the importance of the inter-relationships between the design of teacher-learning areas, the teaching-learning methods employed, the skills and attitudes of the teachers and the planning process which integrates and co-ordinates all of these. A model indicating these inter-relationships is shown in Figure 3.



It is generally accepted that educational planning is a prerequisite to the determination of educational practices and policies, and the design of buildings. In the model, planning is central. The heavy arrows designate the directions of influence obtaining in what is proposed as the ideal situation. Arrows 1 and 2 emphasise the necessity for architectural design to be based primarily on the methods of teaching and learning to be adopted, which in turn, through the educational planning process, should reflect educational objectives and philosophy.

The experiment described draws attention to two further characteristics of the system:

—In the real, practical situation, all elements in the model are interactive; no element can be considered independently of the others. Frequently, in fact, the direction of arrow 2 is reversed—the methods of teaching and learning are determined by the architectural design of the areas available. The use of a flexible open space can enable the selection of methods of teaching and learning which are not restricted by architectural design, and, in this instance, there were several indications that the quality of the educational process was improved as a consequence.

—Possibly of greater significance is the relationship between methods of teaching and learning, and the skills and attitudes of teachers. For maximum effectiveness, the model suggests that teachers with appropriate skills and attitudes need be provided if particular teaching methods are to be used (arrow 3), and the experimental results provide some evidence in support of this hypothesis. If accepted, this has definite and far reaching implications for the selection and training of teaching staff.

Unless the architectural design is right, AND unless teachers are trained or selected appropriately, educational improvement through innovation in the classroom will be impeded.

CLASSROOM TELEVISION IN THE EDUCATIONAL PROCESS

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Introduction

In today's classroom the teacher is the only person who can remember a time without television. His students, who have been teethed on television, bring to school a visual sophistication which often surpasses his own. Chalk, talk and text served the teacher well in the past, but he is now being called upon to alter his teaching style. Learning patterns change, so do the materials, methods and modes of teaching presentations. This paper seeks to locate rather than solve the problems which television instruction poses for the classroom teacher. It attempts to focus on the implications of this new teaching channel against the background of the overall blurring of distinctions between formal instruction in the classroom and informal education outside the school.

The TV Generation

From prams and playpens their bright young eyes stray back and forth to the flickering screen. Fascinated by the mystery of its moving images they soon sort out the shifting patterns of light and shadow as they learn to spell their first two words—The End. They have never known a time when the TV set did not dictate the arrangement of furniture, meals and bedtime. Switching channels changes the windows of their infant world. Sitting cross-legged on the carpet they watched men walk on the moon and the immense tragedy of the Vietnam War was fought out in their living room. As they grow older Mr. and Mrs. Western Suburbs find that the 'big eye' is their number-one baby sitter, being a reward for good behaviour and a punishment by deprival.

Paradoxically, opening windows on the world for some means closing shutters for others. Children living in high-rise apartments on dense traffic routes no longer tend to learn through games and play patterns. 'Streets, and even sidewalks', McLuhan observes, 'become too intense a scene for the casual interplay of growing up.'[1] From an unbearable and aggressive environment they turn to watching television. It becomes their chief pastime, narrowing their range of interests and confining their leisure activities. As one critic has noted, 'Junior doesn't want to climb trees any more. He'd rather watch Tarzan do it'.

Young children have great difficulty in distinguishing clowns, cartoons and commercials. High quality commercials, expertly packaged with animation, graphics and catchy tunes attract them. Repetition does not bore them,

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[1]McLuhan, Marshall, *Understanding Media*, Sphere Books Ltd., London, p. 239.

nor do they seem to mind that 'a word from our sponsor' becomes the longest word in the language. Host selling of a sponsor's products by a favourite performer turns them into effective lobbyists in the home, and advertisers value the pressure they can exert on the adult buyer. From messages primarily intended to sell goods and services to older persons they learn words, numbers, shapes (and colours). They enjoy the rapidly fired episodes of 'Sesame Street' with its animated cartoons and entertaining puppetry, with its bouncy melodies, amusing sequences and humorous endings,[2] with its old pantomime trick of the deliberate mistake and misunderstanding so maddeningly dragged out that the involvement of the young viewers is guaranteed.[3] 'Play School' has a wider brief than the crash programme for the culturally deprived, and while it also makes use of friendly adults, its pace, pitch and language level are quite different, but apparently no less acceptable to pre-schoolers.

At all events learning through television becomes a painless absorption of knowledge, free of drudgery. Moreover, television is not merely popular with today's children, it is omnipresent and by the time they are ready for kindergarten they are veteran viewers. Young children come to school with a vast reservoir of vicarious experiences, loosely related facts and assorted data, and though their fund of information is unorganised, yet its acquisition has been an entertaining experience. Prior to enrolment, then, television has already accounted for a significant portion of their intellectual development and has equipped them with considerable visual awareness. Not being print-oriented, many of them become bewildered by the classroom emphasis on books, paper and writing materials. Where their school environment is barren of stimulating artifacts and where its atmosphere is heavy with the drone of adult prescription and direction, the level of their response and participation falls away. From being 'turned on' by the novelty and variety of television, they may well tend to 'switch off' and 'hang loose' in the narrowing dimension of their classroom when confronted with dull, prosaic materials and traditional teaching methods.

Among children frequent viewing begins at about age three and stays relatively high until age 12, then gradually declines, reaching its low point among teenagers. Tastes and programme preferences change with age, but socio-economic status accounts for only minimal differences. In the short term, factors of sex and intelligence, as indicated by several surveys of secondary school students in Victoria, failed to differentiate significantly between the amount of viewing time.[4] These findings are roughly in line with those of overseas inquiries and underline the point that certain children spend as much time in front of the television screen as they do in front of their teachers. It has been estimated that by the time the average American

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[2]Palmer, Edward L., *American Education*, Vol. 5, No. 7, 1969, p. 2.
[3]Mabey, Richard, *Children in Primary School*, Pelican, 1972, p. 70.
[4]Geelong Survey, Victorian Chapter, Aust. College of Education, 1965.
Powell, Robert, *Television Viewing*, 41st ANZAAS Conference, Adelaide, 1969.
Blizard, John, *Individual Differences and Television Viewing Behaviour*, 1972.

student graduates from high school he will have spent 11,000 hours in the classroom and 22,000 hours before the TV set.

What the long term, psychological effects of massive viewing are on the deeper levels of personality it is impossible to say, but it may be postulated that the effects of such exposure, whether desirable or undesirable, need not be sudden or spectacular; they are more likely to be gradual, barely perceptible, but persistent and in the end prevailing. Indeed, Babin believes that 'audio-visual man' already exists, with 'a new way of communicating, of living and understanding, a new mental framework, a new kind of activity and involvement'.[5] If this view is correct, then the school that fails to recognise the significance and meaning of television for the modern student may be committing itself to a kind of obsolescence. The challenge to the teacher, as Cohen sees it, is 'to use the very medium which has so strong an attraction in out-of-school hours . . . for television must have also a potentially significant (if not actual) impact on classroom learning'.[6]

Teacher Attitudes to Television Instruction

Just as Head Start programmes have indicated the necessity of parental involvement and reinforcement to sustain ability gains, so the attitude of the class teacher to the medium can make or break a TV lesson. A teacher's responsiveness affects his pupils' response. A lesson viewed by the class of a teacher who resents TV has little chance of being effective.[7] Moreover, teacher hostility leads to 'token saturation' or the extensive under-utilization of the wide availability of electronic devices. Since the mere installation of television in a school will not automatically ensure its acceptance by staff members, it is important to appreciate the bases for support and opposition.

Teachers who are already convinced of the medium's potential will need no prompting to use it and will espouse it enthusiastically, even to the point of exhibiting symptoms of gadget mania. Other teachers will support the introduction of TV in the hope or belief that they will be saved by technology from the drudgery of repetitive instruction. On the other hand, teachers who wish to be saved from technology will dismiss television as hardware in search of a function, reject what they regard as a machine solution to a human problem, and urge others to beware of technocrats bringing ambiguous gifts. Between these two groups of teachers is the uncommitted majority. It is vital to win the support of this large spectator group and in this matter influential sections and individuals within a school system or community can play a significant role.

Since any sudden or substantial change in a teacher's traditional role or communication style is apt to inspire resistance, innovations are less likely to be resented if they can be used to support or slightly modify existing practices, rather than displace or radically restructure them, and if, further, they can be used not merely in one specific area, but in a variety

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[5]Babin, Pierre, *The Audio-Visual Man*, Ohio, 1970, p. 8.
[6]Cohen, David, *The Australian Science Teachers Journal*, Vol. 16, No. 2, 1970, p. 8.
[7]Diamond, Robert M., *A Guide to Instructional Television*, McGraw-Hill, p. 204.

of educational tasks. Thus television must be perceived as more valuable than the technique it supersedes, and as consistent with past experience, current values and receiver needs. Its functional difficulty must be minimised and its complexity understood. This clearly calls for a major programme of in-service retraining. Resistance is inevitable if equipment is not technically reliable, easily accessible and relatively simple to operate. Teachers may also adopt negative attitudes to classroom television because (i) of unfortunate experience in the past with other innovations, (ii) it has not been used before, (iii) rivalry with a master tele-teacher will lower their status, (iv) they are confident of the success of their own tried and true methods, and (v) colleagues do not use it.[8] In view of these objections a mere introduction to basic television teaching techniques will not suffice.

'The innovator is the antithesis of the "organization man"; and while most of us want to be regarded as progressives, many of us at heart are only conservatives who want liberal results. We say that the status quo must go, but we retain a certain nostalgia for the old rituals. We want to innovate, but we are more comfortable if the other fellow does it.[9] There are few rewards for the innovators; all eyes are on them and their mistakes are magnified. Moreover, high quality education through television cannot be purchased at bargain basement prices. The business of making information likeable, understandable and memorable is expensive in terms of dollars, efforts and emotions. No innovation in education will ever pay off 100 per cent; if it repays 10 per cent net on the outlay, then it is a good return on the investment.

Advantages of Classroom Television

The TV screen gives the impression that the tele-teacher is directly involved in a one-to-one presentation for he looks directly into the eyes of each student in the class. It also gives the teacher an effective means for controlling, directing, and holding attention, for showing only what is pertinent and withholding what is extraneous. In allowing the class to see on the screen only what the teacher is talking about and nothing else, television provides a special, central point of concentration for group instruction. In addition, it enables the tele-teacher to complete a body of information without interruption. One American student is reported as saying that she preferred television to the live lecture 'because it didn't give other students the opportunity to flaunt their egos by interrupting with unnecessary questions'.

Television possesses the properties of image multiplication, magnification and translation.[10] Viewing students, even outside the live situation become privileged, close-up observers. Dissections, crystal formation, the fine details of a map and certain technical operations like the fluxing and flowing of solder are seen better through a zoom lens than with the

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[8]Van Wyck, William F., *Audiovisual Instruction*. Vol. 16, No. 3, 1971, p. 90.
[9]Hubbell, Ned, *American Education*, Vol. 1, No. 7, 1965, p. 24.
[10]McLean, Donald, *It's People That Matter*, Angus & Robertson, 1969, p. 194.

naked eye. The TV camera can also provide a visual presentation of a problem and a sense of timeliness to classes or the 'immediacy' of direct experience. Where colour is not significant to the object or message, it appears not to be crucial to learning. But colour TV is likely to be particularly valuable in such courses as chemistry, art, and botany where colour is a vital dimension.

Television is an extremely versatile medium, not only because it can be used to teach a variety of school subjects, but also because it can effect a conjunction of many quite different media. It is not merely a projection device capable of doing a single job or performing some highly specialised service. TV can co-ordinate film, slides, overhead transparencies, tape recordings, two-dimensional graphics, and three-dimensional models,[11] and it can put all these audio-visual aids under finger-tip control. Thus television complements other instructional materials and it extends their range by increasing their flexibility, effectiveness and availability. Consequently, with television audio-visual materials are not used as enrichment devices to be utilized if time permits, but rather as a carefully planned, integrated part of the teaching-learning environment.

While the medium can be used to transmit no more than the picture of a person as he talks, yet there are some problems even in the best TV lessons. The illusion of instant knowledge, which is part of the communication-learning fallacy, may well be the greatest danger. Over-simplification, inevitable in the necessary condensation and compression, may illuminate the essential facts in a science lesson, for example, without suggesting or conveying the 'feel' of the subject. Science must supply the 'why' to add to the technological 'how'. The methods of teaching science cannot ignore the methods of science. Ironically, the more lucid the treatment and the more digestible the content, the greater the danger. However, opposition to TV instruction on the grounds that it does not conduct drill, seminars, or discussions, cater for individual differences, provide feedback or stop to answer questions, is based on a failure to use television properly, not on faults inherent in the medium itself.

As far as mathematics is concerned there are severe limitations to the use of television and these limitations become more serious as the level of instruction rises. Except in the simpliest situations it is necessary to have in view more visual material than can be carried on a standard 25-inch screen. The relatively small number (625) of picture lines to the frame is not helped by the use of very large screen television projection devices. For when the image is greatly enlarged in size, the line spacing is increased, and in order to smooth out these discontinuities the viewer must increase his distance from the screen. Science teachers like television for its ability to magnify experimental detail, to show what is happening in some inaccessible place, in some potentially harmful situation, or in some bacteria-free environment. But the derivation of a maths formula is not dangerous; it does not have

[11]Dale, Edgar, *Audiovisual Methods in Teaching*, 3rd ed., 1969, p. 358.

to be kept in a sterile environment; and it gains nothing in logical clarity by being magnified or viewed in close up: It requires careful planning to adjust to the restriction and to minimise the hampering effect of the limitation. However, much elementary maths is related to the real world and offers scope for animation, experiments and demonstrations with concrete materials. Here TV has the advantage of being able to show a situation in real time and while it is actually happening.

On-Camera Teachers

For the teacher prepared to engage in the production of TV lesson segments at the local school level, the greatest problem is the illusion that he has been understood by the viewing class.[12] Cameras are not students, nor the studio a classroom. Reliance on face-to-face communication techniques will not usually put the message across and the signals when to repeat, to retrack, to enlarge and to clarify are unavailable to the TV teacher. The sceptics and the day dreamers, the bored and the anxious are as missing as the reward of an answering gleam in a receptive eye. But somehow in the empty lens the TV teacher must find them all. Never boring the quick or rushing the slow, he must anticipate every question, whim, or gesture. A carefully paced delivery is particularly important when treating any topic in a cumulative discipline where successive steps are crucially related to prior knowledge.

Since the TV teacher can neither see his students nor complacently assume the usual 'captive audience', and since cameras are curiously cold and unresponsive, he must quickly establish rapport with the lens in order to attract his viewers. In this regard youth and beauty are not important assets, but voice and mannerism are. The teacher on camera must speak easily and well, without memorizing his lines except in dramatic presentations, without reference to prompt and cue devices, to real individuals whom he knows and understands, and whom he can virtually see looking back at him through the picture tube. A relaxed style that comes from a thorough, integrated knowledge of subject matter is most necessary, for discomfiture on the screen easily spreads to students in the classroom.

Fortunately most teachers can become accustomed to the TV medium after some initial adjustment and training in production techniques.[13] The general opinion is that they like it better than they thought they would. Students, too, like to see their teacher on the TV screen. Indeed one of the basic assumptions about closed circuit television in a school is that effective programmes can be produced by ordinary staff personnel. However, there will be some screen casualties. The TV camera exposes posture and pretence more quickly than anything else, and teachers who are not naturally at home before the camera should be urged not to try to be what they are not. But failure need not mean wastage. The teaching team or media management committee can always suggest that their talents would be better employed in planning content, writing scripts, or producing graphics.

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[12]Fitzmaurice, E. C., *NCEA Bulletin*, August, 1967, p. 138.
[13]Ford Foundation, *Teaching by Television*, 1961, p. 27.

Although TV teaching is pure teaching in the sense that time is not spent on disciplinary problems, it is patent nonsense to suppose that anything, by virtue of being televised, acquires a wider appeal. A lesson does not automatically become better just because it is telecast.[14] The mere interposition of a camera adds no magical quality to the material it surveys. If the material offered to the camera is dull and ineffective, then by the time it reaches the viewer these faults will have multiplied rather than disappeared. TV possesses no built-in mechanism capable of transforming a bad lesson into a good one. A mediocre teacher simply communicates his mediocrity to a wider audience. The medium is no better than the man who uses it.

Sometimes what is essentially a straightforward teaching programme is unbecomingly tricked out in a misguided attempt to give it a superficial appeal. Visual material should not be used for its own sake; achieving the 'televisual' is not the primary objective. While attention span may be more a function of the visual display than of a child's particular make-up and background, yet too much visual sophistication can obscure the concept, confuse the learner and inhibit the maximum planned effect. Moreover, since TV has become so firmly associated with amusement and entertainment,[15] and because relaxed home viewing habits accompany the student into the classroom, there is a real danger of a student's expecting anything shown on the school screen to be a soft option to the drill and discipline of traditional teaching practices. Teachers meet their students' expectations half-way when in their TV lesson they employ, for example, the gimmick of signature tunes to top and tail their performance as a matter of course. In an educational context such trimmings are irrelevant and compromise the instructional objectives of the lesson. What is required is the simple and proper use of picture and music to attune the pupils to lesson content in seconds.

No adherence to set stylistic production formats will guarantee success in the classroom for there is no essentially correct or proven method of producing video lessons. Yet because of the nature of TV the normal classroom techniques of verbal descriptions are inadequate. The straight talk should not dominate the teacher's TV lesson for mere talk tends to frustrate the viewer and alienate any interest gained by his performance as a speaker. Moreover, TV humour is a highly specialised form of humour; it is difficult to make an unseen audience laugh. Though working guidelines are neither foolproof nor the last word, observation indicates that a major requirement of a TV lesson, as in all teaching situations, is that the presentation be clear, simple and precise. In addition there is a real need for breaks, pauses, summaries, movements to another area of the set, and variations in the manner of presentation. Where necessary, the script should plan for sequences to be interspersed with dummied up questions from prepared extras. Neither

[14]Klein, G., and Hockley, J., *Television Teaching Techniques*, Angus & Robertson, 1972, p. 27.

[15]Maclean, Roderick, *Television in Education*, Methuen, London, 1968, p. 4.

should the lesson itself, particularly if one of a series, be closed in format. It should leave questions, ideas and problems for the teacher to expand in the classroom and for the students to look forward to in the next programme of the series.

Closed Circuit Television

Closed Circuit television makes heavy demands on a teacher's time, especially when the TV assignment is carried individually and as an overload above normal duties. A certain level of teaching pressure must not be exceeded if teachers are to avail of closed circuit television facilities. The production of a 20-minute segment may require some 20 hours in selecting content, script writing, arranging for resource materials, preparing graphics, rehearsing in the studio where the producer-director is supreme, and finally presenting the lesson. The teacher must also consider pre-telecast activity by the class and plan for follow-up by way of further amplification, drill, remedial work or testing. This kind of approach discourages passive reception and encourages active involvement.

Initially local programmes are apt to be produced on a fairly haphazard basis, topics with obvious visual appeal being chosen in preference to others with more immediate relevance to the syllabus. Teachers are more likely to lean towards their area of greatest proficiency rather than to areas requiring attention. This piecemeal approach is probably essential in the early stages, for it allows teachers to take their first steps in a new and unfamiliar medium while working in sectors where they are confident of their own ability. The result is usually a personal success, if not a television success, and the result normally stimulates a desire to develop further the skills which will enable them to use the medium to its fullest advantage. As soon as teachers are working confidently in the medium and are conversant with the discipline and techniques of television, it becomes necessary to develop a pattern of analysis for each subject that will expose (i) observations and experiences needed, (ii) basic concepts and theories to be developed, (iii) cause and effect relationships to be established, and (iv) attitudes to be fostered. A production template of this kind can be readily integrated into the full teaching programme.

Unlike broadcast television, CCTV cannot continue after school hours or during term vacations; nor can it reach the home and enable parents to help their children in learning activities. But whereas off-air broadcasts tend almost inevitably to supplemental and open-ended enrichment programmes, closed circuit television is much more adaptable to direct teaching. It is for showing what the curriculum demands, what the teacher wants and what the students need. Moreover, there is in closed circuit television a personal link between teacher and learner that broadcast television cannot hope to achieve. The CCTV teacher is known to his students and can induce a participation not possible in network programmes. Although the single school system offers the maximum degree of liaison with one's audience, CCTV should not be used for 'overflow' teaching, whereby lessons with some vitual content are directed to the class in one room and relayed to pupils in another. To confront a teacher simultaneously with two different

types of audience—the one present and visible, the other remote and unseen —is to divide and distract his attention and to demand a hybrid and unsatisfactory technique.

A valuable by-product from the mini-system in an individual school is the stimulus which it gives to team teaching. Not only can all Form 3 History classes, for example, benefit from the combined expertise of the entire History staff, and even from members of the Music and Art Departments, but participating teachers can also derive much advantage from clarifying their aims and objectives and from planning and selecting content material commensurate with the Form's abilities. It could be expected, too, that teaching practice would improve from the more effective use of audio-visual aids which the tele-lesson demands and from the TV requirement that the presentation be lucid and concise. Every teacher uses an instructional medium much more effectively after he has prepared at least one lesson in that medium.

Closed circuit television represents a substantial outlay and a sizable annual expenditure. The production of lavish enrichment programmes and lessons heavily illustrated with visual materials not readily available to the school is very costly and normally beyond budget resources. Yet the system does overcome the problem that network planning is not completely geared to local requirements in scheduling, content material and syllabus emphasis. To de-emphasise broadcast programmes is not to discount their educational value, but merely to suggest that open network and closed circuit television are complementary, not competitive. CCTV ensures that television does not run away with itself; the strictly defined teaching purpose remains the dominant factor.

Teachers and Broadcast Television

The earliest lessons were designed to 'stand alone' without prior preparation or subsequent follow-up by the teacher. The attempt to recreate a classroom situation, complete with chalk and blackboard, ignored the potential in the medium. Also, such a policy tended 'to bypass the teacher'[16] and induce a 'teaching made easier' attitude, wherein the teacher expected the telecast to do all the work and neglected to contribute his own efforts. Moreover, programmes that emphasized factual information tended to prescribe the school curriculum, to dictate the rate of class progress, and subtly compelled schools to follow 'the television course'. Self-contained lessons suggested a syllabus take-over by the network. Fortunately, the negative effects of full coverage material have been diminished in recent years by a deliberate shift in programme content, by revising the transmission schedule, and by involving teachers in the planning and development stages. This movement has also been assisted by local school arrangements to use and purchase a proper supply of teachers' notes, pupil pamphlets and supporting materials.

Broadcast television must take into account chance and uncommitted viewing by the general public as well as the known and controlled audience

[16] Hawkins, Bernard, *Television in the Australian Classroom*, A.C.E.R., 1969, p. 31.

of the classroom. Thus, production standards must be at all times the highest quality. Planning and scheduling must be fixed and advertised well in advance of reception. Once the programme sequence has been determined there is little opportunity to introduce variations during the series, either to meet local requirements or in response to interim feedback. This problem of rigidity in syllabus and timing has not been entirely resolved by replays at carefully spaced intervals even of series reduced in size. Of itself broadcast television, however thoughtfully it may be scheduled, can never hope to meet the complete convenience of all its users.

Where circumstances oblige schools to receive their broadcast lessons live 'off-air', a flexible and selective approach in the classroom is difficult to achieve. The teacher becomes locked into a schedule not of his own choosing and beyond his control. Moreover, he has had no opportunity to preview the lesson in order to determine its relationship to the syllabus, to his own work programme, and to the ability level of his students. The local school wants control over use and content. To be effective anything coming from outside must first be screened, adapted and integrated, otherwise the planned pattern of learning activities might be thrown into disastrous disarray. It is, of course, the video tape recorder than can minimise these difficulties. With this piece of equipment the teacher can either replay the lesson at appropriate times or even restructure the entire programme by changing sound and picture to suit his needs. This he can do by compression or expansion of the time scale of an event he wishes his class to see or of the space scale for the field of view to be displayed to his students. Again, he does not need to work in real time for the editing and compilation of the recording; he can make up the recording in sections over quite a long period if necessary. Also, replays can be used to fix learning, remove misconceptions and for private viewing by individual students.[17] The video tape recorder thus helps to solve the logistics problem of classes viewing TV broadcasts without major interference to the normal school routine. While the legality of copying off-air material is still to be established, its educational advantages are unquestionable.

Broadcast television has made available on an unprecedented scale the products, both past and present, of 'high culture'. On 11th March, 1956, NBC presented a three-hour broadcast of Sir Laurence Olivier's film version of Richard III. Surveys indicated that the telecast was watched by at least 25 million people—more in this one showing than the probable combined total of audiences for stage productions of all Shakespeare's plays since he wrote them. Although mere availability does not in itself imply a raising of standards, we have in television an instrument of 'cultural enlightenment' and the ultimate effect of easy access to Shakespeare and other dramatists should be beneficial, especially if the teacher of English is prepared to capitalize on their availability.

Through the use of broadcast television the classroom teacher can learn along with his students, but without loss of prestige in their eyes. Such

[17]Torkelson, George M., *Educational Media*, N.E.A., 1968, p. 11.

experience is not the primary value, but a useful by-product.[18] Some new teaching methods may even be suggested by the broadcast. But this does not do a lot to make him a better original teacher; there is a point of diminishing return in watching someone else teach. Again, broadcast television can pose severe status problems for some teachers. Such people may feel that their unchallenged authority in the classroom has been weakened by the intrusion of outside experts via the TV screen, and that their role has changed from being the focal point of classroom instruction to sharing the spotlight with a master tele-teacher. Others may tend to feel that teaching competence as demonstrated in the off-air lesson is being compared with their own methods and procedures, and that in this competition their stature among their students has decreased.

Broadcast television is of great value in the classroom; there are no poor programmes, though the quality of some is better than others. However, planners of educational television programmes find it difficult to assess the nature of their potential contribution. Problems arise in identifying the target audience, sampling and testing. On this latter point pre-test, post-test procedures are more likely to be used than the sophisticated Stable Correlate method developed by Belson.[19] And in analysing the findings there is often a difficulty in accounting for the 'Hawthorne' effect in which merely changing the physical environment of the teaching situation is enough to enhance performance. Even if research budgets were adequate, our instruments for measuring such intangibles as critical thinking, attitudes and human relations are still unsatisfactory in many respects.[20] While network programmes do not represent the greatest impact which television can make in education, the school is fortunate that it can combine the best of both closed circuit and broadcast television systems.

Screen Education

For some years now various Australian states, schools, and education systems have been engaged in the study of television and film as an art form and medium of communication quite apart from its use as a visual aid to the better understanding of, say, Science or Geography.[21] Such courses commonly seek to develop critical judgment and appreciation among students, to make them less conservative in their tastes by extending their range of viewing, and to assist them in making a purposeful choice among available programmes rather than watching indiscriminately. It is not my intention to discuss the content and arrangement of such courses, nor to detail the necessary technical equipment, but to invite attention to some features which merit special consideration.

Introduction to basic screen techniques is usually followed by pupil planning and production of short sequences. The purpose is to encourage creative activity and to provide the pupils with an opportunity for dramatic

[18]Schramm, Wilbur, *Educational Television*, U.S. Dept. of HEW, 1965, p. 26.
[19]Belson, William A., *The Impact of Television*, Cheshire, 1967, p. 174.
[20]Smith, M. H., *Using Television in the Classroom*, McGraw-Hill, 1961, p. 14.
[21]Adams, Phillip, *Mass Media Review*, 1972, p. 33.

expression in a medium which is very much part of their world. The aim is to develop insight into the language and process of expression in the television medium. The quality of most pupil productions is well below commercial standards for the objective is not to produce mini-masterpieces. The product is largely irrelevant and unimportant. What matters most is the process. For it is the process that sharpens the critical awareness of pupils in their own viewing of the professional screen.

The 'literature of TV' includes those types of programmes, analogous in many of their purposes, if not in their form, to novels, short stories, and plays, and it reflects the standards and values of the men who create it and, to some extent, their assumptions about the audiences for whom they create. It is a literature which reveals the prevailing attitudes of our age, from the encouragement of the acquisition of material comforts as an end in itself to the growing awareness of the dangers of pollution and racial prejudice. Although it is a genuine reflection of our times, the 'literature of TV' is uneven in quality. Truthful and artistic at its best, trivial and formless at its worst, it is created within certain limitations imposed by the medium—limitations of theme, language and style more severe than those in other media, because of its wide audience base. Yet television introduces an element into literature that cannot be as convincingly expressed in novels or films, namely real time. On live television presentation and perception are simultaneous. The 'grammar of TV' communicates largely in the 'present tense' and conveys a sense of the 'first person'.[22]

Adaptations are not necessarily and always inferior to the original. Whenever a teacher can arrange for his students to read the original of a television adaptation like 'The Forsyte Saga', he has an excellent opportunity to engage his class in a cross-media analysis of the nature and extent of the changes involved in adapting from one medium to another. Cross-media analysis is usually conducted in terms of specific inquiries within the genera' categories of character and conflict, setting, structure and standards. Nor need the teacher limit to two the number of media under investigation. Certainly the opportunities are tempting when we face the almost contemporaneous appearance of a story in the form of a novel, stage play, film and television drama. For example, each of the four versions of 'The Caine Mutiny' had a different hero. The TV show, aimed at a mass audience, emphasized patriotism, authority and allegiance. More important, the cast was reduced to the principals and the plot to its principles; the real moral problem—the refusal of subordinates to assist an incompetent, unpopular superior—was clear, whereas in the book it was lost under detail and in the film under scenery.[23]

Screen education courses typically direct attention to television commercials. Commercials constitute one of the sharpest indices of social values to be found on television and more directly than any other form they com-

[22]Postman, Neil, *Television and the Teaching of English*, N.Y., 1961, p. 47.
[23]Carpenter, Edmund, *Explorations in Communication*, Boston, 1969, p. 171.

municate what their creators think their viewers believe is the 'good life'. Sometimes prepared with taste and imagination, commercials present a complete stock of cultural symbols, which carry in their form the prevailing standards of economic and social success. Their proper study calls for a careful and objective observer, and teachers and students ought to approach their inquiries unencumbered by preconceived notions. The arguments of the advertisers need to be weighed and their value separated from a persuasive delivery and a compelling image.

Young children are not bored by commercials and an interesting by-product of such exposure concerns schools that produce lesson materials for local consumption. By speed and compression the TV ad. aims to deliver the strongest message in the shortest time, and the practice of loading every split second of screen time with information and meaning has affected the production of lesson segments. A generation of youngsters who have become acclimatised to TV speed now possess the ability to see things on a screen more quickly. A school's producer knows that he can now cut shots back to a fraction of a second's duration and still not confuse audiences. Pupils can perceive images faster than their teachers because television has taught them over the years how to do it.[24] This phenomenon is one of the factors behind the periodic revision carried out by schools of locally produced lesson materials.

Television and Reading

Television has made possible what Margaret Mead has called 'the lateral transmission' of information, or the virtually instantaneous communication of ideas to every level of society, to children and adults alike. Thus today's student can hardly be described by any of the old educational analogies comparing him to an empty bucket or a blank page.[25] In solving the problem of getting information to people, technology has released schools to teach their pupils how to make significant use of the information they get in abundance from all sources. 'Fact saturated' TV channels may force schools to re-evaluate their traditional preoccupation with providing answers in the classroom and to undertake the task of developing in their students the capacity to ask meaningful questions, conduct disciplined inquiries and make sensible evaluations.

Although book sales have soared, and there is 'a paperback revolution', and an increased interest in speed reading has accompanied the 'knowledge explosion' or 'information overload', yet McLuhan maintains that the electronic media have broken the monopoly of print. But it is only the monopoly that has been broken.[26] Book reading has not been destroyed, nor will it disappear. Television has elevated the book to the role of trainer of critical and aesthetic power. Powers of apprehension, judgment and selectivity developed by reading can be applied to experiences with non-

[24]Murray, John, *The Box in the Corner*, Melb., 1969, p. 75.
[25]Rosenthal, Raymond, *McLuhan Pro & Con*, Pelican, 1969, p. 252.
[26]Stearn, Gerald E., *McLuhan Hot & Cold*, Pelican, 1968, p. 66.

print media. With the advent of TV the book as a teaching aid has relinquished its old function of providing information and assumed a new role. Consequently, reading and television are complementary, not competitive activities, and this is why the preservation of book culture is as important as the development of TV.

In its form the book is individualistic and isolates the reader in silence. I. A. Richards has called reading an anti-social activity which makes powerful demands on a person's capacity for imagination and abstraction. Watching television, on the other hand, is apt to be a collective or family activity, a slow brain wave response. The imbalance in favour of passive spectatorship is not likely to be redressed by taking a TV vacation for a month, since few people could stand such a deprivation. On this point McLuhan's advice is the better strategy:

> 'to resist TV one must acquire the antidote of a related medium like print'.

Nothing shows up TV so much as a good book, and vice versa. Reading, which was once a pastime, must become an art again if it is to reverse the deadening effect on the senses which relaxed TV viewing induces.[27]

As regards the relation of television viewing to pupil reading habits, the research findings are ambiguous. Himmelweit asserted that 'book reading comes into its own, not despite TV, but because of it'. Yet a subsequent BBC investigation revealed a slight reduction in reading. And American evidence, in general, is inconclusive. At home, certain questions in the Geelong Survey of 1965 were directed at the impact of television on reading. But the responses to the questionnaire gave no indication of what kind of books were read and there was no check group of non-viewers. Most pupils admitted to doing some reading for pleasure, but there was no way of telling whether this was better in quantity or quality than would have been the case before television.[28]

Research and Instructional Television

Television was first conceived for communication purposes rather than for education. Its genesis did not occur within a training framework and the initial development of TV occurred outside the school context. TV does not strictly represent a technological response to perceived instructional needs. This factor may help to explain why early comparability studies were not only not conducted in purpose built premises, but carried out in converted cafeterias and in make-shift arrangements to school auditoriums. Where conditions are unsuitable for proper and adequate testing there is great risk of rejecting an educationally useful concept, for it must be conceded that in such situations only a very few innovations would be able to demonstrate their effectiveness. Thus a bias forms which favours new teaching procedures that constitute only slight departures from existing methods, and which can survive when only superficial changes and minor variations are made in the classroom context.

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[27]Woods, Richard, *The Media Maze*, Ohio, 1969, p. 52.
[28]MacCallum, Mungo, *Ten Years of Television*, Melb. 1968, p. 101.

Unfortunately, too, the general research paradigm, with its search for mean differences in effects produced by a method, tends to obscure much educationally significant data.[29] It seems likely that certain teaching methods or treatments, that were educationally useful, have been rejected simply because their average effects with a group of students were not significantly different in the statistical sense from those of some accepted or established method. It is possible that some of these discarded treatments did, in fact, have useful and interesting effects that were not revealed by a simple comparison of means or variances. For example, two methods may produce different effects on the rank order in which they place a group of students in terms of an achievement test without differing in their mean effects.

In the 1950s and early 1960s a number of research investigations were directed at comparing the effectiveness of TV instruction with alternative teaching methods as measured by the performances of matched groups on identical tests of common material. A major problem in such inquiries lies in defining the outcomes of teaching for which a method is a means. Such outcomes are a complex of knowledge, skills, attitudes and habits. Although considerable progress has been made in formulating knowledge and skills in behavioural terms, the specifying schedules are still not comprehensive enough to encompass the entire range of desired outcomes or sensitive enough to assess their relative importance with precision. Moreover, not all outcomes can be tested immediately the period allotted to learning is over. Again, since the appropriateness of a method depends upon a conjunction of particulars, there still remains the question of generalization. Where research results do not reveal a high positive correlation among all the desired learning outcomes when television instruction is used, this may reflect the difficulty in refining the measuring instruments more than television's ineffectiveness.

Some of the early research projects into TV instruction seem to have been mounted by people with vested interests in the results. A number of lavishly funded studies seem to have been associated with high pressure promotional campaigns. Overselling the idea that TV was a satisfactory instrument for the mediation of all kinds of instruction on every level of education produced the inevitable backlash of disenchantment when promised results failed to materialise. In addition, strong predispositions for or against particular outcomes from the research tended to affect the structure of the testing situation to the extent that it gave the impression that a particular set of responses to a bank of questionnaire items was permissible, if not encouraged. A classic instance of this kind of influence, admittedly outside the classroom context, is reported in the U.S. inquiry into the impact of televised violence[30] where 'in the shock studies, aggression is required and only the degree of aggression can vary'. Perhaps it was this sort of situation that induced Gordon to declare that 'too much ITV research has been (and is),

[29]Rossi, P. H., and Biddle, B. J., *The New Media and Education*, Anchor Books, 1967, p. 190.
[30]Surgeon-General, *Television and Growing Up*, U.S. Dept. of HEW, 1972, p. 65.

incompetent, poorly designed, and sometimes (intentionally and unintentionally), dishonest'.[31]

It is at present impossible in practice to determine—with the confidence represented by the research convention implied by the general acceptance of 0·05 or 0·01 probability level as the criteria for belief—the one best method for each of numerous combinations of variables in the (classroom) learning situation.[32] Yet, while we cannot demonstrate the superiority of TV instruction over other teaching methods by irrefutable experimental results, common sense tells us that one method is better than another in a particular case. As in many other instances, until we have a much greater fund of scientific documentation, we must often, surely, base our development on estimates of probability. If we were to wait for research to be complete at each point, we would be obliged to hold back for decades. Just as the steam engine preceded the elaborate formulation of the laws of thermodynamics by a century, so we cannot afford to wait for research to fix an infallible blueprint for our progress with classroom television. While no one teaching method has been shown to be in and of itself better than another, we should not allow 'the best' to be the enemy of 'the good'.

Conclusion

Today's children grow up with television and are more visually minded in their learning than adults. On the practical level the teacher must be prepared to concede that 'chalk and talk' is not the ultimate means of communication. He must be ready to modify his message and method in order to relate to the special needs and requirements of mass media orientated students.

To do an effective job demands your own production facilities. But an impressive array of prestigious equipment does not automatically ensure either learning by visual perception or the adoption of an iconic mode of presentation. Because teacher attitudes to classroom television swing between hostility, hesitancy and high praise, there is need of a major re-training programme to enable the teacher to understand, select and use new instructional methods and materials with efficiency. Such a course would help to dispel any preoccupation with the uniqueness of the medium so that television instruction would come to be regarded as an essential component in a balanced blend of teaching techniques.

It is not typical in making decisions about educational innovations to insist upon statistically significant differences. Seldom, if ever, is a textbook selected on the basis of its scientifically proven effectiveness in producing greater student learning, retention or transfer. To decide not to introduce classroom television instruction because of reservations as to its value, or to decide to wait for the ideal moment which never comes, is at once to deny progress and to reject the assistance of a valuable medium, possibly of an essential nature.

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[31]Gordon, George N., *Classroom Television*, Hastings House, N.Y., 1970, p. 208.
[32]Falk, Barbara, and Dow, K. L., *University Teaching: Reality & Change*, A.C.E.R., 1971, p. 37.

READING WITH WORDS IN COLOUR

Miss D. L. Gum

The described investigation was carried out at the Ashford House School for Cerebral Palsied Children, Ashford, South Australia, between February and May, 1968.

Ashford House School provided education and physical therapy for educable cerebral palsied children. Educability was assessed as the ability to profit from formal learning to the extent where a child would achieve the reading of simple stories for pleasure—rather than just be able to copy alphabetical letters or count by rote with no appreciation of number concepts.

From those children with that minimum ability there was a range of students up to those who could manage tertiary education. In all children accepted for Ashford House School there were motor handicaps—often these were severe. No educable child was declined enrolment because of the severity of the motor handicap. All children were multiply-handicapped from brain damage; in addition to a disturbance of normal motor movement there usually were sensory, perceptual, intellectual, and sometimes emotional handicaps. Each enrolment was determined by the then Medical Director who was recognised as an experienced psychologist, as well as being a physician. Detailed appraisements of sensory, perceptual, and intellectual abilities and disabilities were therefore available from the enrolment and follow-up assessments. The writer was the then Director (Educationist) of Ashford House School. The nine children included in the Words in Colour experimental group had therefore been enrolled by the Medical Director (using his standard criteria for acceptance) with no contemplation of their being accepted for any experimental programme.

In the Words in Colour investigation the Medical Director advised on such general principles of methodology as were essential to avoid (as far as possible) factors such as the Hawthorne effect. This guidance was in keeping with the close integration of medicine and education at Ashford House. The experimental group children's Class Teacher undertook the Words in Colour programme. This teacher ensured that no children were given any material pertaining to the reading age scale that was used to assess the reading ages of the children before and after the experimental period. The Medical Director, the Director, and the Class Teacher had no aspirations of success with the Gattegno Method; the investigation was directed towards evaluating and not proving the Method. In fact, doubts were held on whether it would be suitable for such perceptually disorientated children. The great spread of charted words in so many closely related colours may have been just too confusing and too difficult for children with intellectual and perceptual handicaps. But from the beginning the children found they were presented with an absorbing and creative situation that gave them eagerness, intensity, and a power to understand and master a Method that became of inestimable help in their reading, and in their verbal and written expression.

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They achieved creativeness in composition of prose and verse that showed the channelling of dynamic mental energy.

What was the basis of Gattegno's Words in Colour Method? Perhaps we can best get a glimpse of this by quoting from Gattegno's 'Background and Principles: Words in Colour' (Educational Explorers Limited):

> 'It is clear that because we are used to talking about things, we give them names. When we come to the signs of the language, we give them names also, as we do in the case of the letters of the alphabet. But in the alphabet we have two types of characters, the vowels and the consonants. The vowels have sounds of their own . . . in a phonetic language, a unique sound. In languages such as English and French, they have a number of sounds. In phonetic languages their names coincide with their sounds, in non-phonetic languages with one of their sounds. Consonants, on the other hand, have no sound of their own and "sound with" the vowels. Thus they have names only. "C" in English, for example, can be pronounced in a variety of ways according to the combination of letters in which it is found. But why use the names of consonants if that complicates things, and particularly if we gain nothing from doing so?
>
> 'It is possible to avoid these names by using colour. This will mean that consanants will have different names in different contexts.
>
> 'Colour has a place in the teaching of reading and writing. If we use colour to write each sign, we can at first refer to the sign by giving its colour instead of giving it a sound or name. This is one of the ways in which the teacher hands the responsibility of learning to the children.
>
> 'In addition to this, we can use colour in a systematic way to bring out the points we wish to stress. Thus if we colour the "a" in "all" using the colour used for "o" in "or", we can suggest the similarity of sound; while by using two very different colours for "a" to represent the two different sounds it has in the word "fatal", for example, we make it clear what we wish to say.
>
> 'Colour is an easier medium to use than geometric signs such as underlining, crossing, etc., which seem to interfere with the morphology of the script. It is only intended that colour should be used to introduce words, however. The children will see the sounds written in colour, but will write them in their own books in one colour only. We teach a child that "a" can be pronounced "a" as in "late" or "a" as in "cat". We would need to give him the same teaching using colours, but the use of the same colour for the same sound until he knows it, will help him to remember which is which.'

At Ashford House School the programme was introduced initially to the children through the medium of coloured chalks on the chalkboard. A pointer, Dr. Gattegno's 'silent teacher', was used as the linking instrument to indicate the signs that formed words or the words that formed sentences. This technique known as Visual Dictation was practised at progressively increasing speed, helping the children to blend sounds into words in the first instance, and then to combine words into sentences. At each stage of progress the children worked within the restricted scope of the signs learned as each chart was introduced, and yet it was found that within the restricted language so much flexibility could be achieved. This restricted language

proved to be especially beneficial for cerebral palsied children because they early gained a feeling of confidence and power. They learned to manipulate the first simple groups of signs to form words; they reversed the signs with growing awareness of their skill in doing this; they substituted signs to discover new words. In the first week or two, for instance, it was astonishing to note the children's ingenuity in seeing how many words could be discovered using only the five vowels blended with two or three consonants.

Perhaps the activity that gave the children the greatest feeling of power over words was the Game of Transformations. As Gattegno says in his 'Reading with Words in Colour' (Educational Explorers):

> 'The psychological significance of the exercise lies in its being based on the analytic and synthetic powers of the mind, calling on these to work simultaneously'.

For example, to transform 'pat' into 'stops', using only one of the four operations at each move, namely substitution of a sign, reversal of the word, addition, or insertion of a sign, with each move required to produce a proper English word, gave real mastery over the written form of words and realistic assistance with spelling. One solution of this example of transformation of 'pat' to 'stops' could be worked as follows: 'pat'—substitute 'e'—'pet', —addition of 's'—'pets', —reversal of word—'step', —addition of 's'—'steps', —substitution of 'o'—'stops'. These brain-damaged children with all their difficulties were using a power of imagery that was quite exciting.

As the programme progressed so the children extended their skill in following the pointer to make simple sentences as the words were indicated in the required order from the charts. Very early they learned to retain the words; they would wait until the whole sentence had been pointed out in its correct sequence: and then (as soon as the pointer stopped) they would say it as a whole, naturally and with the intonation of ordinary conversation, and thus with complete comprehension. Increasing speed was demanded and achieved as the sweeping movement of the pointer accelerated the children's ability to form sentences in this way.

Concurrently with all aspects of the reading programme, the children began to enjoy the experience of independent writing within the restricted, but developing, language: and, from the outset they felt significant success. Spontaneous creative writing had now become an integrated part of their linguistic power. For children who had previously experienced such difficulty in transferring their words into writing this was one of the most rewarding aspects of the programme. As the weeks went on the ideas began to flow freely with increasing enjoyment and satisfaction, and the volume was limited only by the children's own physical difficulties in motor movement. Oral dictation which followed visual dictation depended on the sound of the spoken language rather than on the pointer. The children had already succeeded so well in reading by visual dictation: and it was fascinating to see their mastery over the spelling of the written word as they transferred this to their own paper.

The time allotted for the Words in Colour programme during the school day was two sessions of 30 minutes each and these were calculatingly

spaced. It was found after numerous trials that a session immediately before the recess break, and another before the lunch break were the most successful periods for intensive work. It should be noted that these small cerebral palsied children were denied an ordinary school day, in that they needed to be programmed for physical therapy and other remedial measures in school time.

Finally, after 10 weeks of the school year, the children had been presented with nearly 300 different signs in 56 colours and they had before them in their classroom the eight charts of the Fidel phonic table, showing the sounds of the English language in its entirety. The Fidel, the name of this tableau, derives from a word used in Amharic, the official language of Ethiopia, roughly equivalent in meaning to syllabary. It was the Amharic Fidel that inspired the grapheme-phoneme analysis of Words in Colour.

Now having considered the basic principles of Gattegno's Method, let us turn to a brief overview of the processes involved in 'Communication'.

Communication, whether by spoken, written, or by any other means is a highly complicated activity. It involves thought, emotion, movement; and, it involves visual, auditory, vibratory, and spatial perceptions. However, with an over-simplification, this highly complicated activity may be thought of in terms of three processes which mark off stages between what is seen, or heard, and understood, and is then put into speech, writing, or other expressive action. While different workers use different terms many are agreed on three processes. One set of terms is *RECEPTION* which appears in a sensory stimulus: *INTERPRETATION* which is an intellectual process: and *EXPRESSION* which is the termination in motor activity. Another set of terms for the same processes is *DECODING* or the selecting from the flood of sensory stimuli being received: *ASSOCIATION* or the ability to manipulate and deal with the symbols received in a meaningful way: and *ENCODING* or the expressing of meaningful ideas through motor activity.

In the first of the above processes (Reception/Decoding) the difficulty is the decision to concentrate selectively on the stimuli being received—a decision that requires two factors: willingness to concentrate and the ability to concentrate. With cerebral palsied children willingness may be present, but distractibility (often overt, but sometimes concealed) is usually excessive enough to make it difficult for the child to pay adequate attention. With the Gattegno Words in Colour the interest of the children was aroused, the lessons were lively and creative and were within the power of each child participating. As the children's interest mounted their attention increased and their distractibility lessened; the children's joy and expertise were matched only by the curiosity and admiration of visiting observers.

Along with the increase in reading and language ability there was improved alertness and receptivity as a result of the stimulation (and the achievement). There was, thus, a greater receptivity to general classroom instruction.

The Ashford House School group used for the investigation in 1968 will now be described.

Nine children of six to eight years were taken as the group for use of the Words in Colour Method. No special selection was made in that these children would have otherwise been working in that particular classroom at that particular educational level irrespective of teaching methods used. No control group was used as it is considered impossible to match multiply-handicapped cerebral palsied children with varying handicaps and varying degrees of handicaps as may be done with normal children. Had children from other classrooms been admitted to the experimental group their feeling that they had been specially included could have given motivational impetus of the Hawthorne type. To minimise this effect all children in the group had been with the experimental teacher in the previous school year. During that previous time, she had brought to bear her enthusiasm, her imagination, and her skill as an educationist in capturing and keeping the interest of the children. She provided variety and stimulation; she sought to increase attention span and reduce distractibility. She had the same group of children in 1967 as in first term 1968: the difference was that during the first term of 1968, she used Gattegno's Words in Colour.

A brief individual description of each child in the experimental group and an indication of his/her gains from the Words in Colour programme appear below.

I.C. A child with all four limbs severely affected (quadriplegia). He had good native intelligence but was unable to utilise it because of gross distractibility accompanied by a tendency to perseveration (the continually returning to and persisting with topics of his own). He was unable to walk unaided or to exercise good eye-hand co-ordination. Over the trial period his perceptual difficulties diminished, his concentration improved, he became more group-involved, and his higher than average reading age increased significantly.

J.K. An athetoid child with those neurological, purposeless, uncontrolled, curiously irregular, writhing muscle movements. Intellectually she had above-average intelligence, but her athetoid movements diminished her expressive ability both in motor movements and in speech. Her drive became so strong during the trial period that she became intensely absorbed in writing prose almost to the limits of muscular fatigue. This drive became so channelled into implementing the results of Words in Colour that her reading age increased by 26 months during the four months instruction.

A.S. A Greek boy with no English language when he started in the School in 1967. The initial psychological assessment therefore had to be carried out by the Medical Director's gestures and demonstrations, and using performance (non-verbal) items only. This assessment correctly predicted a high degree of intellectual ability. A non-walker, he was grossly athetoid to the extent of having almost no useful hand-control. He was thus unable to use a pencil, but was ultimately taught to express his written work on an electric typewriter. His coarse hand-control permitted him to strike the typewriter keys with a pointer. Fortunately, he achieved useful speech and his rapid acquisition of language gave him a high level of English expression commensurate with his intellectual ability. During the trial period he

developed a language competence that would have been thought impossible for a multiply-handicapped child of foreign culture.

PM. A quadriplegic boy with all four limbs severely involved and with a congenital heart condition. As well as spatial difficulties he also had a significant degree of hearing loss. It will be recognised that auditory perception was therefore impaired. Despite these handicaps (spatial involving vision and auditory), he benefited during the trial period by achieving a 17 months reading age gain whereas previously his reading age was consistent only with his chronological age. He engaged in Words in Colour so enthusiastically that it would have been hard to recognise his multiple problems—the overall of which was greater than the sum of its parts.

DC. Although predominantly a hemiplegic boy (paralysis of arm and leg on the same side) all four limbs were involved by motor disturbance. He lacked power in both hands. He had impaired perception of space and form. Although he had clear speech it lacked phonal qualities reflecting an inability to perceive these qualities in an auditory way. He was somewhat reserved in unfamiliar situations. During the trial period not only did his language abilities increase to a satisfying degree, but also his diffidence in group and individual situations was lost. The increase in self-confidence is interesting if viewed in the light of being below the normal reading age before Words in Colour and his achieving a reading age gain of 24 months during it.

SD. A quadriplegic girl (all four limbs affected) with an athetoid element that contaminated motor function. She had a bi-lateral hearing loss, predominantly the high-tone deafness type, which severely affected her hearing of (and therefore production of) consonants. She could manage only with a hearing-aid and even with it she had auditory difficulties. Despite these problems she was able to participate in the Words in Colour trial without feeling any inadequacy or frustration. On the contrary she enjoyed the trial period and at the end of it her reading age was more closely approaching her chronological age, which was most satisfying in a hard-of-hearing child.

KS. This child had gross difficulties in the perception of shape and form; these were handicapping in almost all areas of performance, to the extent where nothing remained constant and she probably lived in a world that was one big buzzing confusion. It was not unexpected, therefore, that she was timid, fearful, insecure and anxious. The fact that she stammered was not surprising. A reading age gain of 30 months during the trial period not only gave her mastery of language, it increased her personal-social skills and greatly helped in her fuller development as a charming little person.

NS. A paraplegic boy with severe spasticity of both legs. Speech was clearly intelligible. On intelligence scales involving time limits on items, he tested at far below average limits. On untimed tests of the Binet type he still showed enough difficulties to fall no higher than dull-normal. This initial testing by the Medical Director highlighted problems in number ability, memory span (both for sentences and digits), and he had no concepts of 'bigger than, smaller than, older than, younger than'. He would attempt to cloak his test-situation difficulties by giving a cheeky (even if somewhat appealing) response. For example, on digit recall he would cheekily call,

'1, 2, 3, 4, 5, 6, 7, 8, 9, 10', instead of the digits presented to him. This may sound a minor problem but the identification of this mode of response for items with which he could not cope pointed up a possibility of his rejecting the symbols utilised in Words in Colour. However, with skilled and understanding introduction to the Method, he soon gained safety in giving correct responses and within a short time all 'cheekiness' as a defence mechanism became unnecessary. His positive orientation towards language developed quickly, and, as he gained language skills (particularly through letters singly and in combinations) so did he get a corresponding confidence in his own ability to handle numbers.

HV. A child of Dutch parents who were bi-lingual. He had cross-cultural differences as well as physical, intellectual, and perceptual handicaps. His cross-cultural background and a mild hearing loss possibly contributed to his infantile type of speech. He was very hyper-active, this excess physical activity arising from neurological causes. With this physical hyper-activity there was the usual distractibility, and poor attention span. Remedial measures had been implemented before the trial period to increase his attention and concentration and these were proving effective. With the introduction of Words in Colour, however, he received an opportunity to channel his excess activity into an absorbing exercise and he responded accordingly. Although his relatively considerable gain in reading age did not come up to his chronological age, he was greatly helped in his self-control. He was able to sit quietly, to keep to the task, and to reduce the internal and external stimuli that were previously fragmenting his performance.

Table 1 shows the chronological ages of the nine children discussed above with their reading ages measured before the introduction of Words in Colour and the chronological and reading ages four months later. Reading ages were assessed on Schonell's Graded Reading Vocabulary Test, 'Diagnostic and Attainment Testing' (Oliver and Boyd Ltd.).

Table 1

Showing the increases in reading ages after four months reading with Words in Colour

Child's Identification	February, 1968		June, 1968		CA gain	RA gain
	CA	RA	CA	RA		
LC	6-4	7-9	6-8	9-4	4 months	19 months
JK	6-10	8-1	7-2	10-3	4 months	26 months
AS	6-11	8-9	7-3	13-4	4 months	55 months
PM	7-1	7-1	7-5	8-6	4 months	17 months
DC	7-3	6-1	7-7	8-1	4 months	24 months
SD	7-10	7-2	8-2	7-9	4 months	7 months
KS	7-10	8-1	8-2	10-7	4 months	30 months
NS	7-11	7-1	8-3	9-9	4 months	32 months
HV	8-0	6-8	8-4	7-4	4 months	8 months

The above Table represents a numerical assessment of the value of Words in Colour. To us working with the children this numerical gain was exciting. But it cannot convey the far greater satisfaction that prevailed from the opening up of new worlds for the children in their power and pleasure in using language.

This was shown in their creative writing both in prose and verse; their stories, in particular, showed the ingenious weaving of the charted words into

original stories of their own composition. And to conclude this paper I must share examples of this with you.

A Story

'One day in a village in Japan lived a rich rich man. He had two million dollars. He was a kind man. In the next village lived a poor poor man. His name was Sharpa. One day Sharpa went to the next village where the rich rich man lived. His name was Karachi. Karachi gave a big bag of money to Sharpa and he bought a magic carpet. Sharpa flew over the town. The baker's eyes nearly popped out when Sharpa flew over the town. When Sharpa said Abracadabra the carpet landed on a Japan pet shop in the busy street. He got off his carpet and the people put it in the newspaper. The people wanted a big Test. The Test was to stop Sharpa. So on a Monday night ten men went to Siam. At Siam the ten men waited until twenty-four minutes past twelve. The ten men's names were Atotoset and many others. The man in charge was Atotoset and a General walked by but they did not know that Sharpa had known that they were going to catch him. The General was really Sharpa. So they didn't catch him.'

NS 8-3 years

The Bushfire

Flakes of hot ashes
Falling over the trees.
Yellow flashes
More hot ashes.
The trees were burnt,
Yellow and red,
A man caw
A man was hurt.

NS 8-3 years

Night-time Comes

Night, night. Now
It is time to go to bed.
As I lie on my bed,
I wonder how
The stars get shiny,
Shiny as they are,
And the little star
Twinkles.

DC 7-7 years

Acknowledgement is made of the warmth and assistance of the then Medical Director, Dr. Ralph Horton, and Class Teacher, Miss Elizabeth Wilton, at all times, and particularly during this investigation.

GRAPHICAL COMMUNICATION

PROFESSOR C. E. MOORHOUSE

This paper outlines: (i) the background of a new (and, apparently, somewhat unusual) subject which is to be introduced at the Sixth Form (Higher School Certificate) level in Victoria in 1974; (ii) the considerations which governed the design of its syllabus.

The subject includes a somewhat novel set of component elements and care should be taken to avoid associating it unduly with 'Art' on the one hand and 'Craft' ('Mechanical Drawing') on the other. It may be regarded as an educational experiment with the proviso that its sponsors hope but do not (unlike some educators) assume that it will automatically be successful.

The author who is Chairman of the Graphical Communication Standing Committee of the Victorian Universities and Schools Examinations Board was one of the organisers of the UNESCO Symposium on Visual Communication which took place in the National Gallery, Melbourne, in late January, 1972, and is editor of two forthcoming books, on Visual Education and on Graphical Communication. He is indebted to Pitman (Australia) for permission to use some of the material he is contributing to both these works.*

I Background

Under similar statutes enacted by the three Victorian Universities the Victorian Universities and Schools Examinations Board is empowered to 'determine upon and conduct the examinations the passing of which is one of the conditions to enter—and to determine the conditions and subjects of the examination'.

For a new subject to be successfully introduced at Higher School Certificate level in Victoria, in a situation where this examination is used for selection purposes, not only by Universities but by a growing number of other tertiary level institutions with entry quotas, acceptance of the subject by the Board, which involves recognition by the Universities, is a sine qua non.

It is necessary for two main reasons. Firstly that unless the subject can be counted in a 'quota score' few pupils will elect to take it, and secondly that unless the subject is a recognised one training programmes for teachers will not be organised by those responsible to teacher training.

The general design of subjects is normally carried out by Standing Committees, which contain representatives of the Universities, one of whom will be Chairman, and of Schools the latter being the majority. These Standing Committees are responsible for the framing of syllabuses and

Symposium on Visual Education and *Visual Messages*, to be published in December, 1973.

details, including the prescription of texts and for the nomination of the examiners appointed by the Board. They normally maintain close contact with the relevant Subject Teachers Association and with the appropriate University departments.

Proposals for syllabus changes and for the introduction of new subjects emanate from these Standing Committees and are submitted to the Board—through its Curriculum Review Committee—and to the Universities for assessment and, all being well, go to the Board for adoption.

This arrangement, which works well for an existing subject area, more especially when the subject is directly relevant to an existing University department, e.g., History, Mathematics, presents some difficulties when the subject proposed does not fit one of the traditional categories—as is the case with Graphical Communication.

There has been for many years a fifth form 'Leaving' examination subject called Mechanical Drawing—a title which, unfortunately, described the subject fairly accurately—and which for some time had been the responsibility of a section of the Art Standing Committee. In 1968 however a separate Standing Committee was set up which began to address itself to the development of a wider and more intellectually demanding subject capable of extension into the Sixth Form.

In 1969 a two-day conference with those teaching the existing subject was organised in order to explain what was intended; a sub-committee of the Victorian Society for Education through Craft was then formed to act as a subject association.

It must be appreciated that the Standing Committees of the Victorian Universities and Schools Examinations Board are only concerned with Secondary High and Public School examinations and not with those of Secondary Technical Schools which in Victoria constitute a significant proportion of the fifth and sixth form age population. Within the Secondary Technical School system (almost wholly the preserve of the State Education Department) subjects of the Mechanical Drawing variety have always been important, and subjects in the Graphical Communication areas are developing especially those associated with industrial art and design, commercial art, and the like.

As several members of the Standing Committee have connections, at various levels, with activities in Technical Education it has been possible to establish and develop liaison between the two groups of teachers interested in Graphical Communication thus joint workshops and conferences have been organised and in-service training courses have been provided by the Art School of the then Melbourne Teachers' College.

At first the Standing Committee proceeded to widen the scope of the existing Mechanical Drawing subject in stages, re-writing the outlines in 'Courses of Study forms I to IV' published for the guidance of schools by the Board and of the fifth form (Leaving) subject, to prepare the way for the introduction of a sixth form one.

It soon became apparent that for the reasons indicated earlier, the effective development of the subject depended on its acceptance for Higher School Certificate, as did the provision of teacher training for it.

It was also clear that the abandonment of the Leaving (fifth form) Examination (of the Board and the Universities) would remove the justification for the Standing Committee's existence unless it was operating a Higher School Certificate subject.

For these reasons the present proposal was developed as rapidly as possible, submitted to the Board in 1971 and, after delays caused by (desirable) changes in the prevailing system of subject recognition, accepted late in 1972 for introduction in 1974. This could justly be said to be in the nick of time since the 1972 Leaving examination turned out to be the last one to be conducted by the Board.

The procedure adopted in 1971 for seeking recognition of a new subject at the Higher School Certificate level required the submission of the syllabus proposed together with a sample examination paper. The material prepared for this purpose was widely circulated by the Board and several comments were received. These were duly considered by the Standing Committees which, in the light of further study and investigation and of a report made by its Vice-Chairman, Mr. L. J. Jones (who spent part of his study leave in England and the United States), concluded that the original proposal was a reasonable first approximation. The Standing Committee expects to make some modifications both before, and during, the three-year period for which the new subject will be on trial. The general content of the subject is unlikely to undergo any great change but it is likely that some changes will be made in the balance of the subject and in the form of the examination.

A description of the subject proposed is given in part III of this paper.

II Graphical Communication—General

At this stage it is necessary to explain what the Standing Committee means by 'Graphical Communication'—which can best be approached by enquiring, as did Munari in his 'Design e Comunicazione Visiva', whether it is possible to define what sort of thing is intended by the title Visual Communication.

It could be said that everything which comes to our eyes is a visual communication of some sort and Munari's contribution to our thinking is to make a distinction between *casual* or accidental and *intentional* visual communication.

(The former is wholly dependent on the observer's reaction to a chance occurrence such as a cloud formation, the latter on his reaction to a designed occurrence such as a set of smoke signals.)

He goes on to suggest two sub-categories of intentional visual communication—that of *aesthetic information* and that of *practical information*.

In these terms the subject which I am discussing here falls into the *practical information* sub-category and is primarily concerned with the

messages which are conveyed by those stationary two-dimensional devices which can be lumped under the heading of 'drawings' which in this context may be of kinds which can be described as representational, diagrammatic, and symbolic.

This excludes a number of means of intentional visual communication in which movement is important as, for example, ballet and film, and it limits the devices in which the use of colour is all-important.

Graphical Communication then uses devices such as pictorial sketches, maps and charts, diagrams, graphs, and symbols in order to convey information, to give explanations, and to issue instructions.

It is commonly used in mathematics and the sciences, in architecture, economics and engineering, and in daily life in advertising, in the control of traffic, and in attempting to lessen language difficulties.

In some areas visual messages of the graphical kind are sufficient in themselves and often superior to the written word, in others they are chiefly of value in amplifying or enriching it.

Since such messages are more and more commonly encountered and more and more widely used as time goes on, it seems curious that so little general attention is devoted to their production on the one hand and to their analysis and interpretation on the other. (This may be because they appear to work.)

My own interest in this field arises from my experience with the education and training of technologists at the tertiary level where, in common with others so engaged, I encounter—more often than not—students whose main abilities, interests and previous education are in the area of mathematics and the physical sciences. These students—admittedly only when sufficient external pressure is applied—show evidence of having acquired reasonable skill in the use of the written word but, remarkably enough, show little or no skill in the use or comprehension of visual messages.

Very few of them seem to be at all acquainted with the use of graphical devices either for guiding their own thoughts or for illustrating their arguments and they are, in any case, all too often painfully slow in producing them on the occasions when they are forced to do so.

I have every reason to believe that those of my colleagues who are concerned with students of the humanites or liberal arts will even more rarely encounter students with any ability in visual communication processes.

One factor which I believe contributes to this state of affairs is that subjects in which words or mathematical symbols are of primary importance are designed for the 'intellectual' while subjects in which visual messages are important are, too often, designed for the 'artistics' on the one hand or the 'practical' on the other—on reflection a curious situation.

It may be that in saying this I am unduly swayed by recollections of my own school-days—those of us who appeared at all bright on transfer to the Senior School at age 13 or 14 were encouraged, if not actually compelled,

to continue with Latin rather than Drawing (the two being scheduled for the same periods in the timetable) and there was a text on Algebra with the memorable comment that after all graphs are only approximations and for those who know no Algebra.

In casting prejudices of the kind I have described on one side, we come to investigate what happens in schools at the secondary level in the fields of visual communication we usually find little in progress; at best only part of the field is being covered and that in a manner somewhat detached from the rest of the educational process.

By far the greatest attention in teaching in the visual communication area tends to be confined to Art subjects on the one hand (Munari's aesthetic information sub-category) and to Technical (or Craft) Drawing ones on the other.

It might be argued that the former are undertaken because they are thought to be of some cultural value while the latter are undertaken because they are thought to be more suitable for the less intellectually able students.

It might also be argued that the former are considered to be essential for the preliminary vocational education of future artists, art teachers, and perhaps' art critics while the latter are considered to be essential for the preliminary vocational education of industrial designers, and craftsmen of various kinds.

Sometimes it appears that the provision of rest pauses between more demanding intellectual occupations is really what is envisaged when visual subjects are introduced.

The situation described has two consequences, neither of them good.

One consequence is that, although there is some acceptance of the view that ideas and information can be conveyed by graphical means there are many otherwise well-educated people who have little idea of the possibilities and limitations of the process and little or no idea of the pitfalls.

Another is that there are at present no properly designed courses of training for teachers of Graphical Communication as such while there are relatively few of high ability undergoing teacher training available to take them.

There is a hen and egg problem here—in Victoria our immediate source of supply of teachers is from those whose backgrounds are in the 'Art' and 'Technical' subjects mentioned and who are willing and able to extend their range of activities.

If visual devices, other than words are to be effectively used in communication, they must conform to sets of conventions which are understood and adopted by those involved in the process and it cannot be too often emphasized that visual communication is not a natural and instinctive operation common to mankind in which no instruction is needed.

III The Subject as Proposed (Appendix I)

It appeared to the Standing Committee that the students who are most likely to take this subject would be those who had already taken the existing fifth form subject which is heavily oriented towards 'Mechanical Drawing'.

As a starting point the Committee decided to group the skills and abilities which it was considered necessary to foster under two general headings described as—

Representational Drawing

Presentation of Information

and listed desirable abilities as follows:

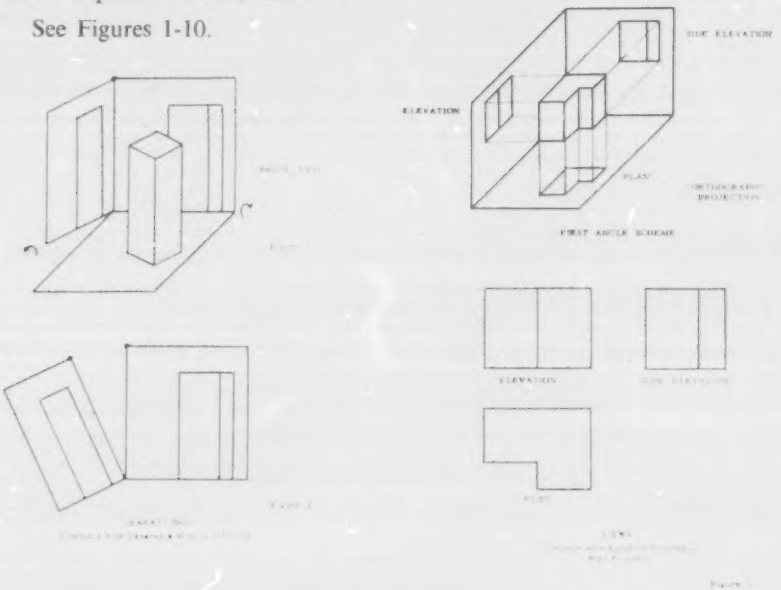
The ability to:

(i) visualize in three dimensions
(ii) understand geometric constructions and methods of representation by projection
(iii) express ideas and present information in graphical form
(iv) analyze and interpret information and ideas presented in graphical form
(v) examine ideas and solve problems by graphic methods
(vi) apply design principles to problems of a graphic nature.

'Representational Drawing'

This section of the subject is primarily concerned with the visualization and graphic representation of physical objects—existing or proposed. Since the elements of projection were expected to have been covered in earlier years the emphasis at sixth form level would be on application to problems of a practical nature and on critical comparison of the methods of projection available for the purpose of making the graphical statement 'This is what it is, or is planned to be, like'.

See Figures 1-10.



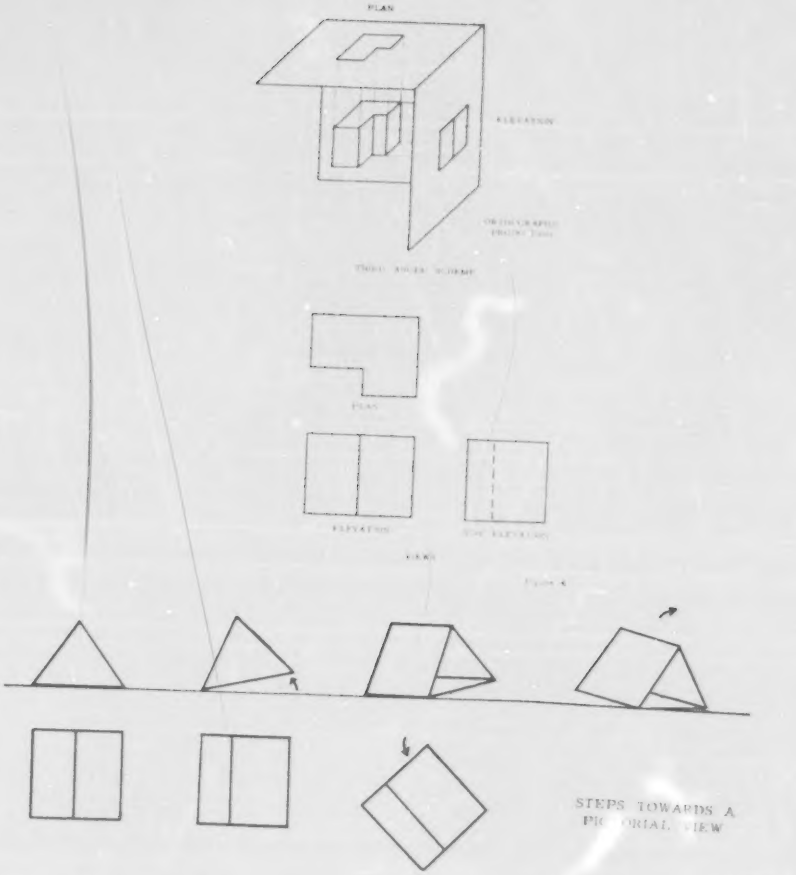
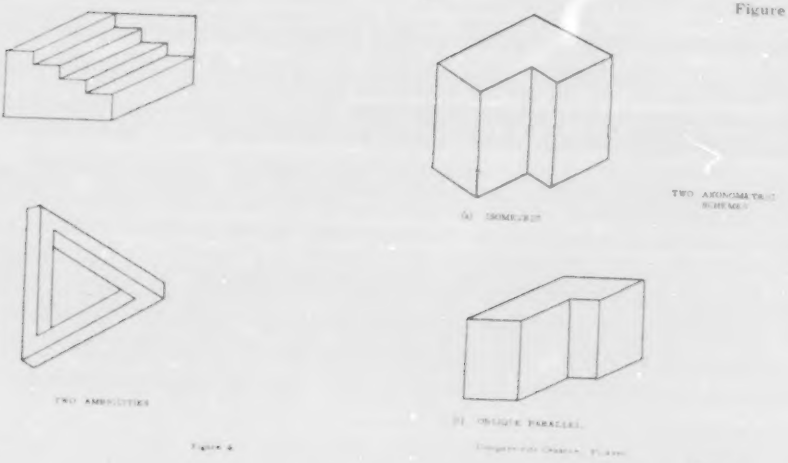
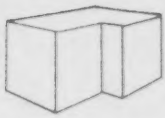
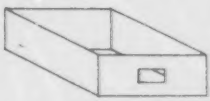

PLAN
ELEVATION
PLAN
ELEVATION
STEPS TOWARDS A
PICTORIAL VIEW

Figure 5

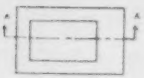

TWO AMBIGUITIES



TWO POINT PERSPECTIVE

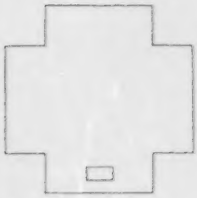


SECTIONAL ELEVATION



PLAN

SCHEME OF SECTION

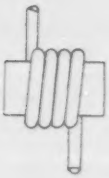


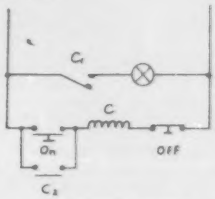
DEVELOPMENT

'Presentation of Information'

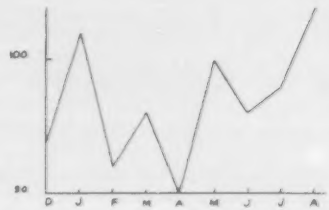
This section, which is expected to be a relatively large part of the subject, since it will not normally have been treated at fifth form level, is devoted to the consideration and use of the methods available for the presentation of information.

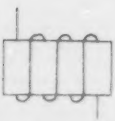
See Figures 11-23.





CONDITIONAL SENTENCE



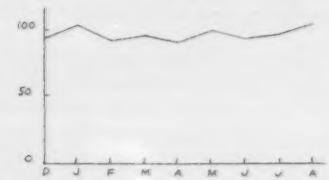


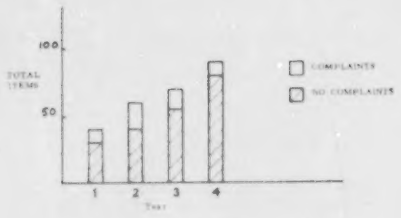
(1)

(2)

EVOLUTION OF A SYMBOL

SYMBOL DIAGRAM

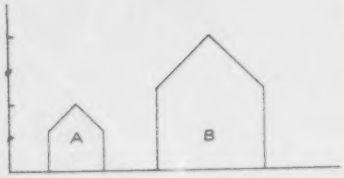




BAR GRAPH

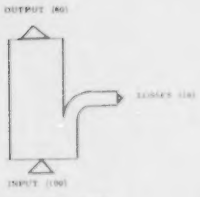
Figure 18

Figure 19



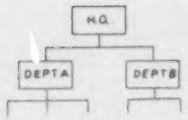
PICTORIAL DECEPTION

Figure 21



FLOW CHART

Figure 18



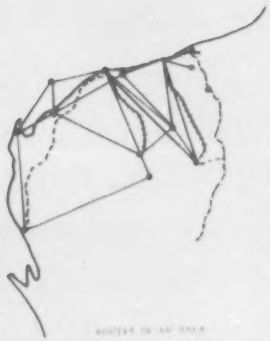
ORGANIZATION CHART

Figure 19

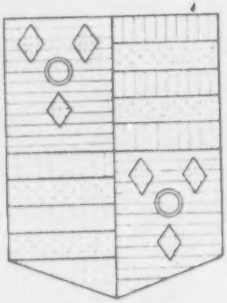
STYLISED MAP

(Showing Locations of Capitals)

Figure 20

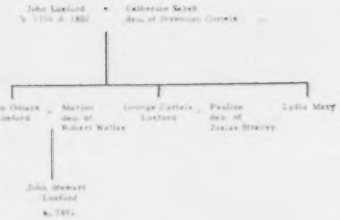


ROUTES IN AN AREA



COAT OF ARMS

(with quarterings)



FAMILY TREE

Figure 23

Figure 22

IV Some Problems of Implementation

Once the major problem—indicated in the introductory section of this paper—'Will this subject be recognised (and hence *count* for quota purposes)?'—has been overcome two others arise—

(i) 'Who can teach it?'
(ii) 'Who will take it?'

The answer to the first of the questions posed can only at this stage be the pragmatic one, i.e., 'Whoever is available for the purpose' and these, as has been remarked, being either teachers of Art, on the one hand, or Mechanical Drawing, on the other, need assistance in the areas in which they have little experience or training.

Some in-service type courses are already in existence and will continue, and the personal efforts of Mr. G. Reade (in particular) in this area have met with some success.

There is reason to hope that a suitable text, sponsored by Pitman's, will be available for 1974; this is designed to meet the existing situation and to be the forerunner of a group of specialized work-books to meet the developing requirements of the subject.

The answer to the second of these questions is, perhaps unfortunately, likely at this stage to be 'Those who wish to become architects and engineers' but it is to be hoped that in due course the view expressed by Professor I. Maxwell, recently retired from the Chair of English in the University of Melbourne, may spread.

His view is that a subject of this kind should be compulsory for those whose sixth form studies are entirely humanistic (Language, History, Social Studies and the like)—in precisely the same way that English is compulsory for those whose sixth form studies are scientific and mathematical.

I myself am primarily interested in this subject from this point of view—I do *not* want it regarded as only for would-be engineers.

Appendix 1

THE VICTORIAN UNIVERSITIES AND SCHOOLS EXAMINATIONS BOARD HIGHER SCHOOL CERTIFICATE—GRAPHICAL COMMUNICATION

Objective of the Subject

The aim of the subject is to develop concepts and skills in the communication of ideas and information by graphic means and also the ability of assessing and criticising material presented in this way.

While it is recognised that much of this subject is of special interest to students of technology there is also much which could be of interest and value to students in other fields especially those undertaking studies which are predominantly literary.

In particular the aim of the subject is to develop the ability

(i) to visualize in three dimensions and represent physical objects graphically;
(ii) to understand and appreciate geometric construction, and methods of representation by projection;
(iii) to express ideas and present information in graphic form;
(iv) to analyse and interpret information and ideas presented in graphic form;
(v) to test ideas and solve problems by graphic methods;
(vi) to apply the elements and principles of design to problems of a graphic nature.

Outline of the Subject

The subject is divided into two main sections:

I Representational Drawing

II Presentation of Information

Throughout both sections of the course, students should be conversant with the application to problems of a graphic nature of the elements of design such as: point, line, shape, size, texture, tone and colour: and such principles of design as: balance, proportion, rhythm, repetition, gradation and contrast.

I REPRESENTATIONAL DRAWING

This section is primarily concerned with the visualization and graphic representation of physical objects. As much of the basic elements of this section is expected to have been covered in earlier years, the emphasis at the Higher School Certificate level should be on its applications to problems of an applied nature.

The student should be aiming to make graphical statements of the kind 'This is what it is, or is to be like' and to make them in the language internationally adopted for this purpose.

1. Methods of Representation

The main topics of interest are listed below:

Orthographic Projection
First angle; third angle; auxiliary views; intersections.
Development of Surfaces
(e.g. Polyhedra)
Axonometric Projection
Isometric; dimetric; trimetric; oblique parallel.
Perspective Projection
Map Projection

2. Drawing Procedures and Conventions

Drawing details; types of lines; dimensions; scales.
Presentation; layout; lettering.
Conventions; representation of components such as screw threads; standard fasteners; gears.
Sectional views; conventions and symbols.
Reproduction of drawings; tracing; other methods.
Freehand sketches; technical sketches.
Assembly drawings; detail drawings.
Presentation—Technical illustration; rendering.

II PRESENTATION OF INFORMATION

This section is concerned with the graphical interpretation of written, oral or tabulated information, the analysis and interpretation of visual data and the assessment of the validity of its presentation.

The aim should be to present data in visually integrated units, each component of which is clear and legible and has some place on the scale of visual significance. Particular emphasis at the Higher School Certificate level should be on developing the student's fluency in communication by such means as:

(a) *Symbols*—Indication of the nature, operation or use of objects and devices, and giving instruction by the use of abstract symbols or figurative illustrations (pictographs), e.g. electrical circuit diagrams, traffic symbols.
(b) *Graphs*—Statistical diagrams, e.g. line graph, scatter graph, bar graph, frequency polygon, block diagram, radial graph, sector graph, pictorial graph, etc.
(c) *Charts and other Diagrams*—Explanatory diagrams; Flow charts, technical, organizational, botanical, etc.
(d) *Maps*—Visualization and representation of statistical, field and photographic data. Flow line map. Geographic, topographic maps, etc. Explanatory and statistical maps. Ray map. Stylized maps, etc. Scales, symbols, legends.

It is considered that the material treated and examples used should be such as to give experience in all the aspects of the course. Particular projects from a number of fields of application such as—Advertising, Architecture, Craft Fields, Engineering, Exhibition Design, Forestry, Industrial Design, Interior Design, Landscape Design, Printing, Stage and Set Design, Town Planning, etc., can be well used.

TIME ALLOTMENT

This course is designed to follow the fifth year subject previously known as Graphics and Technical Drawing. For those who have completed this subject or a similar one, a time allotment of four hours a week is considered essential.

ASSESSMENT

This will consist of two parts:

(a) Work Submitted.
(b) An examination paper of three hours' duration.

A candidate must pass both sections to complete the course satisfactorily. Part (a) will carry half the number of marks of Part (b).

(a) Work Submitted

Candidates are required to submit a folio of work executed during the year. The selection should be representative of a variety of aspects of the course and be of a high standard of presentation. It should be evident from the work submitted that the candidate is conversant with such aspects of the course as the development of ideas through drawing, a variety of drawing types and methods of presentation, and the presentation of ideas and information in graphic form. The work is to be submitted in a flat container, the maximum size of which is 25 inches by 20 inches and made of strong paper.

Any work of a three dimensional nature should be submitted as photographs of a suitable size and showing a variety of views. The work is to be certified as the candidate's own original work of the current year by the Principal and the Graphic Communication teacher and must reach the V.U.S.E.B. not later than the 30th November.

(b) Examination

A paper of three hours' duration, the purpose of which is to assess the candidate's knowledge and comprehension and skills in both parts I and II of the 'Outline of Subject'.

BOOK LIST

Teachers' References:

Arnheim, *Art and Visual Perception* (Faber).
Arnheim, *Visual Thinking* (Faber).
Bowman, *Graphic Communication* (Wiley).
Hoelscher and Springer, *Engineering Drawing and Geometry* (Wiley).
Huff, *How to Lie with Statistics* (Gollancz).
Kepes (and others), *Sign, Symbol, Image* (Braziler).
Scott, *Design Fundamentals* (McGraw-Hill).

Students' References:

French and Svensen, *Mechanical Drawing* (McGraw-Hill).
Dept. Labour and National Service, *Practical Geometry*.
Dept. Labour and National Service, *The Reading of Technical Drawings*.
Lockwood, *Diagrams* (Studio Vista).
Morris, *Geometrical Drawing* (Oxford).
Reekie, *Draftsmanship* (Arnold).
Sierp, *Perspective for Art and High Schools* (Angus and Robertson).
Steel and Fitness, *Descriptive Geometry and Drawing—Senior Book* (Newtex).
The Institution of Engineers, Australia, *Engineering Drawing Practice*.
Wildbur, *Trademarks* (Studio Vista).
Wright, *Designing for Visual Aids* (Studio Vista).

WORRIES OF THE NEW STUDENT

DR. J. M. COLLINS

INTRODUCTION

Investigation of the worries of tertiary students is certainly not a new era of research. (See Schonell, et al., 1962; Musgrove, 1969; Collins, 1972.) Continued interest in the topic, and research in the area, can, I trust, be viewed as a reflection of the attitude that students are worth worrying about.

This continued interest also implies that we do not know all the answers to the questions raised about student adjustment to new environmental situations. Of course this is to be expected because in a time of accelerating social and cultural change not only do those undertaking tertiary studies change but so too do the institutions in which they study. I am confident that it is agreed that the typical student attending any tertiary institution today is a very different student to the one who attended similar institutions at the end of World War II. Certainly the institutions he chooses to study in have changed appreciably.

Thus the premises that underlie the study which constitutes the basis for this paper are:

(a) that student worries today are not necessarily the same as those identified in earlier studies,

(b) that the worries of students are worth investigating, both from a student mental health basis, and from an educational viewpoint.

The Murray Report (1957), which made sweeping recommendations on many aspects of university education, commented on the problem of transition from secondary to tertiary education in some detail and sums up its remarks in these words:

> . . . it may well be that the problem of the intellectual gap between school and university is never perfectly solved in any university anywhere; but we feel strongly that this problem should be treated as one of the first importance for the Australian universities.

While the Murray Report, because of its terms of reference, makes recommendations in relation to universities, it is obviously just as important for colleges of advanced education, teachers' colleges, and all other tertiary education institutions, to consider problems of transition from one stage of education to another.

The work of Genn (1971, p. 25) seems to suggest that the educational institution which makes an analysis of the ecological presses operating in its milieu will be in a position to efficiently foster student potential, both social and academic, and also to adjust its own structure where it is seen that this is desirable.

THE AREA OF CONCERN

Past research (for example, see Schonell, et al., 1962; Katz and Poole, 1969) indicates that student adjustment problems are diverse in nature

and intensify. They vary from student to student and, indeed, the problems faced by the same student often vary from one academic year to another (Schonell, et al., 1962, pp. 192-194). This paper does not intend to deal with problems on a longitudinal basis but rather to focus on problems of adjustment faced by first-year students in their first few weeks as tertiary students. This focus was determined by the conviction that during the period of initial socialization into the role of tertiary student individuals are particularly receptive to forces operating in their life-space. It is a time of role discontinuity when the flexible student is seeking to modify old forms of behaviour to suit new circumstances. Initial experiences and impressions gained at this time may be expected to have long term consequences for many students. If his transition from secondary student to tertiary student can be facilitated with the minimum of stress and anxiety then surely he has a better start in his new environment.

A recent study (Collins, 1972), using a sample of students from a College of Advanced Education, suggests that tertiary students in the Australian context may be more conscious of adjustment problems than students from the United Kingdom. Indeed, a survey of students at one Australian university found that 29 per cent of the students who first enrolled in 1969 had some degree of emotional instability (Barter, 1972).

While it may be accepted that first-year students are inclined to be introspective and to magnify even minor problems during their first year of study the fact that he has problems must necessarily be reflected in his behaviour both as a student and as a person. If we can identify the areas causing student concern, and minimize those over which we have some control, we have obviously performed a service for the individuals concerned. This would also contribute to making the environment in which we work more congenial and less tense.

While recognising that there will always be a percentage of students who find themselves 'out of their depth' intellectually when they attempt tertiary studies this is no excuse for educators ignoring the fact that some students do not gain optimum benefit from their studies because of factors operating in the environment which could be changed. For example, if students fail to realise their potential because of poor rapport between staff and students, then academics must shoulder some of the blame for a waste of human talent.

THE STUDY

The paper examines some of the acknowledged worries of a group of students enrolled in their initial term at an Australian university.

(a) The Sample

The sample consisted of 209 first-year students enrolled among the five faculties of the university. The distribution of student returns among the five faculties was quite uneven: 40 students were enrolled in the Faculty of Arts, 21 in the Faculty of Commerce and Economics; 84 in the Faculty of Education, 31 in the Faculty of Engineering, and 33 in the Faculty of Science. The numerical imbalance of returns can largely be explained as a

function of two variables. The number of students enrolled in first year in each faculty varied quite considerably and since it was considered desirable to maximise the size of student response all first-year students attending lectures during the fifth week of the academic year were approached and invited to respond to the survey form used. The actual percentage of student response from each faculty is indicated in Table 1.

Table 1—Responses obtained from first-year students enrolled in different faculties

Faculty	Number of Forms Distributed	Number Returned	% Response
Arts	54	40	74.1
Commerce and Economics	65	21	32.3
Education	96	84	87.5
Engineering	50	31	62.0
Science	76	33	43.4
Total	341	209	61.3

One source of variation in the percentage return of students enrolled in the various faculties could not be effectively controlled because of the nature of the research topic. Since it was considered appropriate for students to give their responses in as frank and open a manner as possible it was essential that students be permitted to respond anonymously. This, in turn, meant that non-returns could not be followed up.[1]

The overall response percentage of 61.3 per cent presented a viable overall sample upon which to comment.

(b) **The Research Instrument**

The check list developed by Musgrove (1969), and subsequently adapted here in a previous study of students in a college of advanced education (Collins, 1972), was adopted as the most efficient way of obtaining responses from a large cross-section of the university first-year population. The instrument, which is reproduced in full in an appendix to the paper, consisted basically of a check-list of potential student worries supplemented by an open ended section in which students could add problems they felt were not covered in the preceding section.

Students in all faculties completed the check-list within the same week of the academic year and approximately a month after their enrolment.

(c) **Analyses**

(i) **Cross-cultural comparisons**

The responses of students were coded and then the number of students checking each item on the list was recorded. The rank-order for each item

[1]It will be noted that there was considerable variation among the return from the various sub-groups. It is felt that there was at least one factor which contributed to the disparity. It was considerably easier for Arts and Education groups to submit their returns since most of their classroom time is spent within easy reach of the main collection point which was in the Education Department. The students of all other faculties would have been required to make a greater effort to hand in their returns because a special trip to the Education Department would have been involved.

was then calculated and compared with the sample of students studied by Musgrove in his English study. Table 2 contains the data relating to this comparison.[2]

The initial impression that is gained from an examination of the rank-order figures in Table 1 is the similarity in the overall pattern of responses between the samples. The visual impression of similarity is confirmed by statistical analysis. The two samples have a Spearman Rank-Order correlation coefficient which is highly significant ('rho' = 0.84, t = 6.75, df 19, $p > .001$). This high correlation can be taken as at least tentative support for the thesis that both English and Australian students, entering tertiary studies, perceive a similar syndrome of problems facing them in their new environments.

The overall pattern of similarity between samples as far as the rank-order of items is concerned should not mislead one into thinking that the data illustrates no dissimilarities between English and Australian students.

Table 2—Rank order of Items Checked by English and Australian University Samples*

Item	English Sample (N = 292) Rank	%	Australian Sample (N = 209) Rank	%
1. Feeling that you're not working as hard as you should	1	(68.8)	1	(78.0)
2. The thought of examinations or other forms of assessment	2	(67.1)	3	(55.5)
3. Feeling overwhelmed by academic work	3	(48.0)	4.5	(47.8)
4. Being bored by some of your work	4	(41.8)	6	(41.6)
5. Being depressed	5	(34.6)	10	(30.1)
6. Being unsure of your abilities	6	(26.7)	2	(56.9)
7. Difficulty in understanding lectures	7	(23.6)	4.5	(47.8)
8. Worry over money	8	(23.6)	8	(31.6)
9. Worry about future career prospects	9	(21.2)	14	(19.1)
10. Problems with boy/girl friend	10	(18.8)	15	(18.9)
11. Feeling shy or awkward	11	(13.7)	12	(23.0)
12. Lack of guidance in your work by staff	12	(13.4)	11	(26.3)
13. The manner or attitude of a lecturer	13	(13.0)	7	(35.4)
14. Worry about your family	14	(12.0)	16	(15.8)
15. Difficulty in doing written work or exercises	15	(8.6)	9	(31.1)
16. Feeling lonely	16.5	(7.9)	17	(14.8)
17. Disagreements with student friends	16.5	(7.9)	21	(6.9)
18. Unsatisfactory accommodation	18.0	(5.5)	18	(12.4)
19. Difficulty in doing practical work	19	(4.5)	13	(19.6)
20. Homesickness	20	(2.4)	19	(9.0)
21. Rules or restrictions of your residential college	21	(1.4)	20	(3.3)

'rho = .84 't' = 6.75 df 19, $p < .001$

Indeed, when the percentage of English and Australian students checking identical items is compared there are often marked differences between them.

[2]An uncontrolled variable in this comparison is the difference in samples in their distribution by sex. In the English sample almost 76 per cent were males while the percentage of males in the Australian sample is slightly less than 54 per cent.

*The Spearman technique used in comparing the rank-order of samples is described in full in Siegel (1956, pp. 212-213).

This remains true even in instances where the rank-order of the item is identical for each sample.

An examination of Table 3 reveals that on no less than 15 of the 21 items on the check-list, there are statistically significant differences between the samples.

The English sample is proportionally more concerned over the problems described in Items 2 and 17—'The thought of exams', and 'Disagreement with student friends'. No significant differences were observed on the following six items—Item 3 'Feeling overwhelmed by academic work', Item 4 'Being bored by some of your work', Item 5 'Being depressed', Item 9 'Worry about future career prospects', Item 10 'Problems with boy/girl friend', and Item 14 'Worry about your family'. On all 13 remaining items proportionally more Australian students registered concern.

Table 3—Item on which Cross-Cultural Samples Differ Significantly*

	Item	'z'	'p'
(a)	Items with a greater proportion of Australian students checking.		
1.	Feeling that you're not working as hard as you should	3.29	<.001
6.	Being unsure of your abilities	10.06	<.001
7.	Difficulty in understanding lectures	7.80	<.001
8.	Worry over money	2.80	.01>p>.001
11.	Feeling shy or awkward	3.88	<.001
12.	Lack of guidance in your work by staff	5.15	<.001
13.	The manner or attitude of a lecturer	8.62	<.001
15.	Difficulty in doing written work or exercises	10.71	<.001
16.	Feeling lonely	3.45	<.001
18.	Unsatisfactory accommodation	3.88	<.001
19.	Difficulty in doing practical work	7.55	<.001
20.	Homesickness	4.79	<.001
21.	Rules or restrictions of your residential college	2.11	.05>p>.01
(b)	Items with a greater proportion of English students checking.		
2.	The thought of examinations or other forms of assessment	3.87	<.001
17.	Disagreements with student friends	4.29	<.001

It should be noted that the marked differences in proportions of Australian and English samples checking particular items in these data closely parallel results obtained in an earlier study in which the same English sample was compared with a sample of Australian students enrolled at a College of Advanced Education (Collins, 1972). All of the comparisons which were found to be statistically significant in the present data were also significant with the C.A.E. students. The obvious implication of these findings is that confirmation is gained for the impression gained from the earlier study that cross-cultural differences exist between the English and Australian samples.

At least two possible interpretations can be placed on these findings. Either Australian students are more anxious about the tertiary situation they are entering or there actually are more pressures in the Australian milieu. Whichever interpretation is the correct one does not alter the conclusion that

*The technique for comparing the proportions from each culture is described in full in Bruning & Kintz (1968, pp. 199-201).

it seems that educators in Australia should look at the pressures operating in the tertiary studies context with a view to minimizing those which are not conducive to improving the learning environment.

(ii) Male-female comparison

In these days of heightened awareness to problems associated with the role of the female in western society it seemed obvious that a comparison of the responses of male and female students should be made.[3]

The first comparison to be made was to assess the extent to which male and female students perceived problems facing them in their new university environment. This was done by comparing the rank-order responses of the two sub-groups and then calculating the Spearman correlation coefficient between them. The data for this comparison is contained in Table 4.

Table 4—Rank order of Items Checked by Male and Female Students

Item	Males Rank	%	Females Rank	%
1. Feeling that you're not working as hard as you should	1	(74.1)	1	(82.5)
2. The thought of examinations or other forms of assessment	3.5	(43.8)	3	(69.1)
3. Feeling overwhelmed by academic work	6	(40.2)	4	(56.7)
4. Being bored by some of your work	2	(49.1)	9	(33.0)
5. Being depressed	11	(25.0)	7.5	(36.1)
6. Being unsure of your abilities	3.5	(43.8)	2	(72.2)
7. Difficulty in understanding lectures	5	(42.9)	5	(53.6)
8. Worry over money	7	(35.7)	12	(26.8)
9. Worry about future career prospects	13	(18.8)	13.5	(19.6)
10. Problems with boy/girl friend	14	(17.9)	13.5	(19.6)
11. Feeling shy or awkward	15	(16.1)	11	(30.9)
12. Lack of guidance in your work by staff	12	(21.4)	10	(32.0)
13. The manner or attitude of a lecturer	8	(31.3)	6	(40.2)
14. Worry about your family	18	(13.4)	15	(18.6)
15. Difficulty in doing written work or exercises	9	(26.8)	7.5	(36.1)
16. Feeling lonely	16	(15.2)	16	(14.4)
17. Disagreements with student friends	20	(2.7)	21	(1.0)
18. Unsatisfactory accommodation	17	(14.3)	19	(10.3)
19. Difficulty in doing practical work	10	(25.9)	17	(12.4)
20. Homesickness	19	(7.1)	18	(11.3)
21. Rules or restrictions of your residential college	21	(0.0)	20	(1.2)

'rho' = 0.88, t = 8.00, df 19, $p < .001$

The correlation coefficient of 0.88 ($t = 8.00$, df 19, $p < .001$), is an indication of a high degree of consensus in the ranking of items by male and female students. It can thus be concluded that the general pattern of problems faced by beginning tertiary students is perceived in a similar way by male and female students.

The overall similarity in the ranking of problems by students of the two sexes should *not* be taken to indicate that their problems are the same in every respect. When a comparison is made of students checking individual items a different pattern emerges. As Table 5 indicates, there are seven items where males and females differ significantly in their distribution of responses.

[3]These and all subsequent comparisons are confined to the Australian data only.

Table 5—Summary table of chi-square analyses of responses by sex

Item	X^2	df	'p'
1. Feeling that you're not working as hard as you should	1.66	1	.20>p>.10 (N.S.)
2. The thought of examinations or other forms of assessment	12.40	1	p<.001
3. Feeling overwhelmed by academic work	5.04	1	.05>p>.02
4. Being bored by some of your work	4.91	1	.05>p>.02
5. Being depressed	2.53	1	.20>p>.10 (N.S.)
6. Being unsure of your abilities	15.90	1	p<.001
7. Difficulty in understanding lectures	1.99	1	.20>p>.10 (N.S.)
8. Worry over money	1.51	1	.30>p>.20 (N.S.)
9. Worry about future career prospects	0.005	1	.99>p>.98 (N.S.)
10. Problems with boy/girl friend	0.02	1	.90>p>.80 (N.S.)
11. Feeling shy or awkward	5.67	1	.02>p>.01
12. Lack of guidance in your work by staff	2.45	1	.20>p>.10 (N.S.)
13. The manner or attitude of a lecturer	1.45	1	.30>p>.20 (N.S.)
14. Worry about your family	0.68	1	.50>p>.30 (N.S.)
15. Difficulty in doing written work or exercises	1.68	1	.20>p>.10 (N.S.)
16. Feeling lonely	0.002	1	.95>p>.90 (N.S.)
17. Disagreements with student friends	0.13	1	.80>p>.70 (N.S.)
18. Unsatisfactory accommodation	0.43	1	.70>p>.60 (N.S.)
19. Difficulty in doing practical work	5.20	1	.05>p>.02
20. Homesickness	0.66	1	.50>p>.40 (N.S.)
21. Rules or restrictions of your residential college	6.28	1	.02>p>.01

The items for which differences were observed may be divided into two broad categories — personal (non-academic) worries, and professional (academic) worries.

Of the five items where there is a greater incidence of female response three may be classified as 'personal' type worries, viz. Item 6 'Being unsure of your abilities'; Item 11 'Feeling shy or awkward'; and Item 21 'Rules or restrictions of your residential college'.[4] The other two items where females indicate a greater concern could be classified as 'professional' type worries. These are Item 2 'The thought of examinations or other forms of assessment' and Item 3 'Feeling overwhelmed by academic work'.

As may be observed from an examination of Table 6 both items where there is an indication of greater concern by males are of the 'professional'

Table 6—Items on which the distribution of males and females responding differ significantly

Item	X^2	df	'p'
(a) Items checked by a greater proportion of male students.			
4. Being bored by some of your work	4.91	1	.05>p>.02
19. Difficulty in doing practical work	5.20	1	.05>p>.02
(b) Items checked by a greater proportion of female students.			
2. The thought of examinations or other forms of assessment	12.40	1	p<.001
3. Feeling overwhelmed by academic work	5.04	1	.05>p>.02
6. Being unsure of your abilities	15.90	1	p<.001
11. Feeling shy or awkward	5.67	1	.02>p>.01
21. Rules or restrictions of your residential college	6.28	1	.02>p>.01

[4]As an aside, I feel that one could comment that advocates of the Women's Liberation movement could cite such findings as supporting some of their complaints about role socialization in our society.

problem type. They are Item 4 'Being bored by some of your work' and Item 19 'Difficulty in doing practical work'.

It would appear from these analyses that females perceive a greater range of problems associated with settling in to the university setting than do males. Further it appears that females are more subject to 'personal' problems which could be expected to affect their work. It could be suggested that a greater emphasis on student counselling could be used to mitigate the many problems facing female students.[5]

(iii) **Inter-faculty comparisons**[6]

The third major series of analyses carried out were aimed at obtaining an overview of the types of problems which appeared to have more relevance in one academic programme of study than in the others offered at the university. It must be emphasised that the present paper in no way seeks to differentiate between types as problems with regard to their relative impact on individuals. What may be an immensely disturbing problem for one student may be a minor irritant for another. Analyses of this type of problem are beyond the scope of what is attempted here.

The pattern adopted in (i) and (ii) above was carried through in this set of analyses. The Kendal Coefficient of Concordance technique was adopted as an appropriate means of comparing the rank-order responses among the five faculties. The date for these comparisons is contained in Table 7.

It will be observed from an inspection of Table 7 that the correlation among the ranking by the students from different faculties was highly significant ($W = 0.77$, $X^2 = 77.0$, df 20, $p < .001$). Thus, it may be concluded that students in the five programmes of study place their adjustment problems in a similar hierarchical order. This suggests that the syndrome of potential worries of the beginning student are similar irrespective of the course of study chosen.

Additional insights into the relative importance of each type of problem for students enrolled in different faculties were obtained by comparing the distribution of students from each faculty responding to each individual item. It will be observed from an examination of Table 8 that there was a statistically different distribution of students on eight of the 21 items on the check-list.

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[5]A similar suggestion was made relating to female students in the earlier study concerned with C.A.E. students (Collins, 1972).

[6]Because of the uneven sex distribution of students across the five faculties it was impossible to control this variable for these comparisons.

Table 8—Summary table of chi-square analyses of distribution of responses by faculty*

Item	X^2	df	'p'
1. Feeling that you're not working as hard as you should	11.8	4	.02>p>.01
2. The thought of examinations or other forms of assessment	26.64	4	p<.001
3. Feeling overwhelmed by academic work	17.55	4	p<.001
4. Being bored by some of your work	9.14	4	.10>p>.05 (N.S.)
5. Being depressed	5.72	4	.30>p>.20 (N.S.)
6. Being unsure of your abilities	13.40	4	.01>p>.02
7. Difficulty in understanding lectures	43.56	4	p<.001
8. Worry over money	1.05	4	.95>p>.90 (N.S.)
9. Worry about future career prospects	7.75	4	.20>p>.10 (N.S.)
10. Problems with boy/girl friend	0.31	4	.99>p>.98 (N.S.)
11. Feeling shy or awkward	5.05	4	.30>p>.20 (N.S.)
12. Lack of guidance in your work by staff	10.18	4	.05>p>.02
13. The manner or attitude of a lecturer	8.96	4	.10>p>.05 (N.S.)
14. Worry about your family	0.97	4	.95>p>.90 (N.S.)
15. Difficulty in doing written work or exercises	11.35	4	.05>p>.02
16. Feeling lonely	2.76	4	.70>p>.50 (N.S.)
17. Disagreements with student friends	0.09	1	.95>p>.90 (N.S.)
18. Unsatisfactory accommodation	0.49	1	.90>p>.80 (N.S.)
19. Difficulty in doing practical work	27.77	1	p<.001
20. Homesickness	0.03	1	.90>p>.80 (N.S.)
21. Rules or restrictions of your residential college	0.29	1	.70>p>.50 (N.S.)

The differences in distribution of responses by students of different faculties on the items where statistical significance was found were analysed further. On each of these items the percentage of students from each faculty indicating that the item described a problem appropriate to their experience was compared with the results for each other faculty. The results to these analyses are contained in Tables 9-18 inclusive.

To make more than generalized comments about differences among faculties as revealed in Tables 9-18 would obviously be beyond the scope of a paper of this kind. However, even at a first inspection, since some obvious patterns appear discernible, comment appears warranted. Where faculties differ in the percentage of students responding to particular items such differences do not appear to be random in nature. It is not generally the case that students in one faculty having problems in one item have this balanced by having fewer problems on another. Indeed, where students from a faculty have one problem there seems to be an associated cluster of other problems which add to the burden. Further, the general pattern that emerges could be described as one of lack of symmetry. For example, Education students have a greater proportion of students checking six items than Arts students but there are no items which evoke a greater response among Arts students than among Education students. This general pattern dominates the view of inter-faculty comparisons with Education and Engineering

*For items 17-21 inclusive the 5 x 2 tables were collapsed into 2 x 2 tables representing Humanities (Arts + Commerce + Education) and Technologies (Engineering + Science). This was necessary because of low cell frequencies in this section of the analysis.

students apparently having more problems than students from other faculties while Commerce students appear to have the least.

Table 9—Items on which Education and Engineering Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Education students checking.		
2.	The thought of exams or other forms of assessment	6.28	$p<.001$
3.	Being overwhelmed by some of your work	4.00	$p<.001$
7.	Difficulty in understanding lectures	3.90	$p<.001$
(b)	Items with a greater proportion of Engineering students checking.		
19.	Difficulty in doing practical work	7.22	$p<.001$

Table 10—Items on which Education and Arts Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Education students checking.		
1.	Feeling that you're not working as hard as you should	2.35	$.05>p>.01$
2.	The thought of exams or other forms of assessment	2.34	$.05>p>.01$
3.	Being overwhelmed by academic work	3.11	$.01>p>.001$
7.	Difficulty in understanding lectures	11.29	$p<.001$
12.	Lack of guidance in your work by staff	2.59	$.01>p>.001$
15.	Difficulty in doing written work or exercises	3.10	$.01>p>.001$
(b)	Items with a greater proportion of Arts students checking.		
Nil.			

Table 11—Items on which Education and Science Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Education students checking.		
1.	Feeling that you're not working as hard as you should	2.78	$.01>p>.001$
2.	The thought of examinations or other forms of assessment	6.49	$p<.001$
3.	Feeling overwhelmed by academic work	6.07	$p<.001$
6.	Being unsure of your abilities	4.14	$p<.001$
7.	Difficulty in understanding lectures	5.44	$p<.001$
12.	Lack of guidance in your work by staff	3.39	$p<.001$
15.	Difficulty in doing written work or exercises	5.16	$p<.001$
(b)	Items with a greater proportion of Science students checking.		
19.	Difficulty in doing practical work	3.89	$p<.001$

Table 12—Items on which Education and Commerce Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Education students checking.		
1.	Feeling that you're not working as hard as you should	4.60	$p<.001$
2.	The thought of examinations or other forms of assessment	4.75	$p<.001$
3.	Feeling overwhelmed by academic work	4.70	$p<.001$
6.	Being unsure of your abilities	4.88	$p<.001$
7.	Difficulty in understanding lectures	8.13	$p<.001$
12.	Lack of guidance in your work by staff	4.55	$p<.001$
19.	Difficulty in doing practical work	3.72	$p<.001$
(b)	Items with a greater proportion of Commerce students checking.		
Nil.			

Table 13—Items on which Engineering and Arts Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Engineering students checking.		
1.	Feeling that you're not working as hard as you should	2.21	.05>p>.01
7.	Difficulty in understanding lectures	4.58	p<.001
12.	Lack of guidance in your work by staff	2.09	.05>p>.01
15.	Difficulty in doing written work or exercises	2.08	.05>p>.01
19.	Difficulty in doing practical work	6.03	p<.001
(b)	Items with a greater proportion of Arts students checking.		
Nil.			

Table 14—Items on which Engineering and Science Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Engineering students checking.		
1.	Feeling that you're not working as hard as you should	2.45	.05>p>.01
7.	Difficulty in understanding lectures	2.70	.05>p>.01
12.	Lack of guidance in your work by staff	2.67	.01>p>.001
15.	Difficulty in doing written work or exercises	3.64	p<.001
19.	Difficulty in doing practical work	2.13	.05>p>.01
(b)	Items with a greater proportion of Science students checking.		
Nil.			

Table 15—Items on which Engineering and Commerce Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Engineering students checking.		
1.	Feeling that you're not working as hard as you should	4.41	p<.001
6.	Being unsure of your abilities	2.26	.05>p>.01
12.	Lack of guidance in your work by staff	3.33	p<.001
19.	Difficulty in doing practical work	7.48	p<.001
(b)	Items with a greater proportion of Commerce students checking.		
Nil.			

Table 16—Items on which Arts and Science Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Arts students checking.		
3.	Feeling overwhelmed by academic work	2.27	.05>p>.01
6.	Being unsure of your abilities	3.57	p<.001
(b)	Items with a greater proportion of Science students checking.		
7.	Difficulty in understanding lectures	3.44	p<.001
19.	Difficulty in doing practical work	3.53	p<.001

Table 17—Items on which Arts and Commerce Students Differ Significantly

	Item	'z'	'p'
(a)	Items with a greater proportion of Arts students checking.		
2.	The thought of examinations or other forms of assessment	3.76	p<.001
6.	Being unsure of your abilities	4.02	p<.001
19.	Difficulty in doing practical work	2.56	.01>p>.001
(b)	Items with a greater proportion of Commerce students checking.		
Nil.			

Table 18—Items on which Science and Commerce Students Differ Significantly

Item	'z'	'p'
(a) Item with a greater proportion of Science students checking.		
19. Difficulty in doing practical work	5.20	$p<.001$
(b) Items with a greater proportion of Commerce students checking.		
15. Difficulty in doing written work or exercises	2.19	$.05>p>.01$

SUMMARY AND CONCLUSIONS

The data presented in this paper is aimed at providing some insights into the incidence of problems faced by students commencing study at an Australian university. It provides material for a comparison of the problems faced by these students with problems faced by students enrolled in other forms of tertiary education in Australia.

A study of student adjustment problems must be regarded as a complex one, but one which requires some macroscopic overview of the domain before researchers can further analyse priority areas identified in preliminary surveys such as this.

The results obtained here complement in many ways the results obtained with a sample of College of Advanced Education students (Collins, 1972) suggesting that students enrolling in different types of tertiary institutions in Australia have to come to terms with similar 'problems'.

The principal findings of the study could be summarised as suggesting that (a) male and female students, (b) students from different academic programmes of study, and (c) students from different western cultures, all perceive similar priorities in ordering their adjustment worries into an hierarchical list.

The study also reveals differences among groups in an item-by-item analysis. These differences follow the pattern that Australian students tend to check more items than their English counterparts, that female students experience more non-academic, or personal, worries than males in adjusting to the university situation, and that students from strongly vocationally oriented programmes of study (Education and Engineering) appear to perceive more areas of concern, than students from more general programmes of study (Arts, Commerce and Science).

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APPENDIX

STUDENT SURVEY

INFORMATION: In an attempt to gain information about the incidence of various types of problems faced by students undertaking tertiary studies a research project is being carried out by members of the Education Department of the university. It is hoped that knowledge of the level of incidence of various types of problems faced by students will enable recommendations to be made to minimize the effects of such problems.

It would be appreciated if you would agree to provide responses to the questions set out in the survey. You will note that the form does NOT require you to give your name. All that is required is for you to tick the appropriate set of brackets on this page and then proceed to page 2.

(B) Male ( ) Female ( )

(C) *Faculty Enrolment*:
(Arts ( ); Commerce and Economics ( ); Education ( );
Engineering ( ); Science ( ).

(D) *Type of Enrolment*:
Full time ( ); Part time ( )

(E) *Fees*:
Fees paid by a scholarship ( ); Paying own fees ( )

(F) *Enrolment Status*:
1st Year Undergraduate ( )
2nd Year Undergraduate ( )
3rd Year Undergraduate ( )
4th Year Undergraduate ( )
Post-graduate ( )

(H) *Age*:
Years ( )

(H) *Accommodation*:
Living in a College ( )
Living off campus BUT not at own home ( )
Living at parents' home ( )
Living in own home ( )

(I) *Previous Education*:
My last secondary schooling was at:
a state high school ( )
at catholic high school ( )
an independent high school ( )
other ( )
Please give details.

CHECK LIST

INSTRUCTIONS: Think back over *the past week* and then put a tick against any of the following problems that have been a worry to you during that time.

1. Feeling that you're not working as hard as you should ( )
2. The thought of examinations or other forms of assessment ( )
3. Feeling overwhelmed by academic work ( )
4. Being bored by some of your work ( )
5. Being depressed ( )
6. Being unsure of your abilities ( )
7. Difficulty in understanding lectures ( )
8. Worry over money ( )
9. Worry about future career prospects ( )
10. Problems with boy/girl friend ( )
11. Feeling shy or awkward ( )
12. Lack of guidance in your work by staff ( )
13. The manner or attitude of a lecturer ( )
14. Worry about your family ( )
15. Difficulty in doing written work or exercises ( )
16. Feeling lonely ( )
17. Disagreements with student friends ( )
18. Unsatisfactory accommodation ( )
19. Difficulty in doing practical work ( )
20. Homesickness ( )
21. Rules or restrictions of your residential college ( )

If there are any other problems that come to mind that have relation to your life as a student and which have been a worry to you over the past week please continue the list below.

22. ( )
23. ( )
24. ( )
25. ( )

Table 7—Items Checked by Students Enrolled in Different Programmes of Study*

Item	Arts N = 40		Commerce N = 21		Education N = 84		Engineering N = 31		Science N = 33	
	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%
1. Feeling that you're not working as hard as you should	1	(72.5)	1.5	(57.1)	1	(84.7)	1	(87.1)	1	(69.7)
2. The thought of examinations or other forms of assessment	3	(60.0)	3	(42.9)	2	(73.9)	9	(35.5)	6.5	(30.3)
3. Feeling overwhelmed by academic work	4	(45.0)	4.5	(33.3)	4	(64.3)	6.5	(38.7)	8.5	(27.3)
4. Being bored by some of your work	5	(42.5)	1.5	(57.1)	8	(36.9)	2	(58.1)	8.5	(27.3)
5. Being depressed	6	(40.0)	12.5	(14.3)	10.5	(32.1)	11	(32.3)	11.5	(21.2)
6. Being unsure of your abilities	2	(67.5)	4.5	(33.3)	5	(65.5)	3	(54.8)	2.5	(39.4)
7. Difficulty in understanding lectures	16	(15.0)	8.5	(23.8)	3	(72.6)	5	(48.4)	2.5	(39.4)
8. Worry over money	7	(32.5)	8.5	(23.8)	10.5	(32.1)	12	(29.0)	4.0	(36.4)
9. Worry about future career prospects	9.5	(22.5)	10.5	(19.0)	18	(10.7)	13	(25.8)	6.5	(30.3)
10. Problems with boy/girl friend	13	(17.5)	10.5	(19.0)	13	(19.0)	17.5	(16.1)	11.5	(21.2)
11. Feeling shy or awkward	13	(17.5)	15.5	(9.5)	12	(29.8)	14.5	(22.6)	11.5	(21.2)
12. Lack of guidance in your work by staff	11	(20.0)	15.5	(9.5)	9	(34.5)	9	(35.5)	15.5	(15.2)
13. The manner or attitude of a lecturer	8	(27.5)	6.5	(28.6)	6	(46.4)	9	(35.5)	11.5	(21.2)
14. Worry about your family	16	(15.0)	15.5	(9.5)	14	(16.7)	16	(19.4)	15.5	(15.2)
15. Difficulty in doing written work or exercises	9.5	(22.5)	6.5	(28.5)	7	(40.5)	6.5	(38.7)	18.5	(12.1)
16. Feeling lonely	13	(17.5)	15.5	(9.5)	16	(11.9)	14.5	(22.6)	15.5	(15.2)
17. Disagreements with student friends	21	(0.0)	19.5	(0.0)	21	(3.6)	20.5	(0.0)	18.5	(3.0)
18. Unsatisfactory accommodation	16	(15.0)	12.5	(14.3)	19	(8.3)	17.5	(16.1)	15.5	(15.2)
19. Difficulty in doing practical work	18.5	(10.0)	19.5	(0.0)	16	(11.9)	4	(51.6)	5	(33.3)
20. Homesickness	18.5	(10.0)	19.5	(0.0)	16	(11.9)	19	(12.9)	20.5	(3.0)
21. Rules or restrictions of your residential college	20	(2.5)	19.5	(0.0)	20	(6.0)	20.5	(0.0)	20.5	(3.0)

$W = 0.77$, $X^2 = 77.0$, df 20, $p < .001$

*The Kendall Coefficient of Concordance technique of comparing ranks is described in full in Siegel (1956, pp. 229-239).

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